Exhibit 4

THE UNITED STATES DISTRICT COURT

FOR THE NORTHERN DISTRICT OF CALIFORNIA

OAKLAND DIVISION

CIARA NEWTON, Plaintiff, vs. EQUILON ENTERPRISES, LLC DBA SHELL OIL PRODUCTS, Defendants.	)	No. 4:17-cv-03961-YGR

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VOLUME I

VIDEOTAPED

DEPOSITION OF JEFFREY FISCHER

(Pages 1 - 290)

Held at the Law Offices of Lafayette & Kumagai

1300 Clay, Oakland, California

Monday, March 5, 2018, 9:47 a.m.

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REPORTED BY: ELAINA BULDA-JONES, CSR #11720

Q. Okay. And have you ever applied for the -- a permanent position as the refinery health and safety leader?

A. No.

Q. What are your job -- are you presently still a mentor?

A. Yes.

Q. Okay. What are your job duties as mentor?

A. Well, it's to fill in when any -- operations specialist or shift team leader, whatever the -- whatever the needs are. I'm in charge of all laws that come in to -- any new laws, we get together, we discuss them, and we implement them in procedures, documents, training to our department.

I'm in charge of all training documents. I'm the possessor of those and procedures. Anything that's changed comes through -- comes through myself.

Q. For -- are you in charge of all training documents, procedures for the OPCEN unit or for a broader part of the refinery?

A. For my -- for my unit, for OPCEN.

Q. Okay. Anything else?

A. There's five of us that do that job that are in charge of their areas.

Q. Okay.
A. We also help out in the training department with the new hires.
Q. And what --
A. And we also run the new hire class, usually. We all run -- we teach certain jobs, certain skills, classes.
Q. Okay. You said there are five other people with this job at the refinery, five other mentors?
A. Yeah.
Q. Okay. And who are they?
A. Right now, they are -- let's see, those guys left.
Q. Let me ask a slightly different question.
A. Dan Carr.
Q. Do you recall who the --
MR. LAFAYETTE: Let him answer. You're cutting him off. Let him answer.
MS. SMALLETS: Sure.
THE WITNESS: Dan Carr and Kevin Goldsberry just left. He was one. Chuck Decker, and brand-new guy, I can't remember his name. And Anita I think it's Elrich.

BY MS. SMALLETS:

Q. Okay. Were those the same people in 2016 or was it different?

A. It's different.

Q. Okay. Who were they in 2016, the mentors?

A. Let's see, that's Jeff, he's now personnel supervisor, Andre. Jeff Andre.

Q. Okay.

A. Dan Carr, Kevin Goldsberry, and I don't think Anita was there yet. And I don't remember -- they had a whole bunch of different people at that time for the delayed coker group. So I don't remember who exactly was there at that time.

Q. Okay.

A. And myself.

Q. Got it. During the time that you had been a mentor, do you have any direct reports, people that you supervise?

A. Yeah.

Q. Okay. Who are your direct --

A. It was at one point where I supervised -- I had a class.

Q. Okay.

A. And I was in charge of these. They were from the PTEC program at Los Medanos Junior College.

A. A-N-D, sorry.
Q. A-N-D. Okay.
And is that a verbal exam, verbal in -- is there any -- is there any component -- let me ask a different question.
Is there any component of that walk-through that's in writing?
A. No, it's something they have to actually do for the operations specialist.
Q. Okay.
A. They have to perform tasks.
Q. So it's either -- and do they also have to answer questions verbally?
A. Yes.
Q. Okay. And is -- are they given a score on that or is it just a pass-fail?
A. 80 percent.
Q. Okay. And that score is issued by the operations specialist?
A. Yes.
Q. Okay. And so 80 percent is considered passing?
A. Yes.
Q. Okay. And then the lab certification, what's that?

BY MS. SMALLETS:

Q. Okay. And who's currently the manager?

A. Mike Beck.

Q. Do you have -- do you report to Mike Beck in any manner?

A. I do things that Mike wants me to do, yes.

Q. Okay. Is he considered your supervisor?

A. No, Bob Muller --

Q. Okay.

A. -- is my supervisor.

Q. Sometimes people have more than one.

Of the roughly -- do you know, of the roughly 70 people who are in OPCEN, how many are women?

MR. LAFAYETTE: Objection. Lacking in foundation with this witness. May require him to speculate. Not designated the person most knowledgeable with regard to this subject.

BY MS. SMALLETS:

Q. You can answer.

A. I would need a time period.

Q. Okay. Sure. In 2016, do you know how many women were in OPCEN?

MR. LAFAYETTE: Same objection as before. Requires this witness to speculate. Lacking in

foundation. Not relevant or likely to lead to the discovery of admissible evidence.

THE WITNESS: With Ciara, four, not including our associate staff person.

BY MS. SMALLETS:

Q. Okay. Who were the other three women?

A. Helen Forgan, Paula Kapestein, Anita O'Donnell Durant, and then it was Ciara.

Q. Okay.

A. Newton.

Q. Okay. How many women are there in OPCEN currently?

MR. LAFAYETTE: Same objection as before.

THE WITNESS: Two.

BY MS. SMALLETS:

Q. Who are they?

A. Paula Kapestein and then Candace Helter -- oh, sorry, and Anita O'Donnell Durant.

Q. Okay.

A. Three.

Q. When was Candace hired?

MR. LAFAYETTE: Objection. Lacking in foundation. Requires witness to assume facts not in evidence. May require him to speculate. Not designated the person most knowledgeable.

you were training them, how long -- what was she gone for?

MR. LAFAYETTE: Objection. It's argumentative and harassing. He just told you he couldn't do that. There's nothing new on the table.

Just tell her again.

THE WITNESS: I'm in charge of up to 70 employees. I cannot remember two years ago when everybody was here and not here and that's why we document everything.

BY MS. SMALLETS:

Q. Okay. What -- did you have a fixed start time for your training classes?

MR. LAFAYETTE: Objection. The question is vague and ambiguous.

THE WITNESS: Yeah, like, 6:30.

BY MS. SMALLETS:

Q. 6:30?

And how did you communicate that start time to your trainees?

A. The first day when they came in the class.

Q. Okay. And was that communicated verbally or in writing?

A. Verbally. Verbal agreement between the class and myself.

safety glasses on and entering the units. Earplugs, so on.

BY MS. SMALLETS:

Q. Okay. I'm sorry, how does going outside without her safety glasses --

A. Safety -- wearing -- when you enter a unit, you have to have your safety glasses, you have to have your H2S monitor, and you have to have your earplugs on. And she forgot several times.

Q. Did you document that in any way -- in any way?

A. I do not remember documenting it, but I remember having several talks with her.

Q. Did any of your other trainees go outside in the unit without their safety glasses, H2S monitor, or earplugs?

A. Sure.

Q. Which ones?

MR. LAFAYETTE: Objection. They have their right to privacy.

MS. SMALLETS: Counsel, this is a sex discrimination case. This is directly relevant comparative evidence and it's not their privacy rights.

MR. LAFAYETTE: I -- I -- I didn't say it

BY MS. SMALLETS:

Q. What was the gender of the other people who went outside without the safety glasses, H2S monitor, and earplugs?

A. Well, I don't recall if they had all three of those missing, but we would remind each other.

Q. Okay. This --

A. If it becomes a habit then we write them up.

Q. Okay. Okay. What was the gender of the people that you remind?

A. That I what? I'm sorry.

Q. That you remind.

MR. LAFAYETTE: Were they men or women?

THE WITNESS: That I reminded?

BY MS. SMALLETS:

Q. Yes.

A. It would be everybody, all men and women.

Q. Okay. Have you ever reminded...

MR. LAFAYETTE: We just say the other three -- any of the other three on her team.

THE WITNESS: Yeah, they all once or so. I cannot recall how many times they did that or if they done it once or twice but yes, we would sit them down and tell them the importance of wearing

My question was not -- was not whether the class was over. That's sort of --

My question is, whether you asked anybody, regardless of whether or not the class was over.

A. No. Time had passed.

Q. Okay. Do you know whether anyone else asked any of your -- any of the other trainees if they saw that?

A. Not that I know of.

MS. SMALLETS: Okay. We can take a break if you want.

MR. LAFAYETTE: What's that?

MS. SMALLETS: Did you want to take a break?

MR. LAFAYETTE: Yes, please.

THE VIDEOGRAPHER: This concludes Video 2, Volume 1 in the deposition of Jeffrey Fischer.

Going off the record at 3:41.

(Whereupon, a brief recess was taken.)

THE VIDEOGRAPHER: This begins Video 3, Volume 1 in the deposition of Jeffrey Fischer.

Going back on the record at 3:59.

BY MS. SMALLETS:

Q. Did you ever hear people talking in a fake, high, stereotypically female voice over the

radio?

A. Have I ever --

Q. Uh-huh.

A. -- in 29 years?

Q. Yeah.

A. Yeah.

Q. Okay. Did you ever hear anyone doing that -- oh, strike that, actually.

Do you -- did you ever hear anyone doing that during the time period that Ciara worked for Shell?

A. I cannot recall a time during the period that she was there that I heard that voice.

Q. Okay. Did you -- would you -- did you consider that an appropriate thing for an employee to be doing?

MR. LAFAYETTE: Same objection.

THE WITNESS: No.

BY MS. SMALLETS:

Q. Okay. Did you ever hear an employee doing that during a time you were a supervisor?

MR. LAFAYETTE: What do you mean by -- I'm going to object it calls for a legal conclusion. A term not previously used by him. Are we talking about STO?

MS. SMALLETS: I'm using that more generally.

Q. During anytime that you had -- you were -- I guess the word that Richard Metcalf used was "staff."

Is that -- is that a word they used at the facility?

MR. LAFAYETTE: Objection. Asking him what they used is vague and ambiguous. Requires him to speculate. Requires him to assume facts.

BY MS. SMALLETS:

Q. Is the word "staff" used to describe a group of people at the facility?

MR. LAFAYETTE: Same objection.

THE WITNESS: Staff or temporary shift team leader. Is that what you mean?

BY MS. SMALLETS:

Q. No. Okay. So let's go back to the question I'm trying to ask and put that detour aside.

During anytime in which you had any supervisory responsibility, be it as a temporary shift team lead, a permanent shift team lead, a mentor, any of those other capacities that you were in, did you ever hear people talking in a fake,

high, stereotypically female voice over the radio?

MR. LAFAYETTE: Objection. Argumentative. Requires the witness to adopt characteristics to the titles that you refer to when he has not. It's vague and ambiguous. And it is, therefore -- and it's also compound.

THE WITNESS: I can't remember what they were mimicking.

BY MS. SMALLETS:

Q. Okay. The question is did you ever hear that happening at any time since you became a temporary shift team leader in 2005?

MR. LAFAYETTE: Objection to the word "that." Same question I had.

THE WITNESS: I'm sorry.

BY MS. SMALLETS:

Q. Did you -- at any point since 2005, did you hear an employee using a fake, high, stereotypically female voice over the radio?

A. I had.

MR. LAFAYETTE: Objection. The question is compound. It's vague and ambiguous. It's argumentative.

THE WITNESS: There's lots of people that use my radio channel. Lots of people.

Q. Okay. Do you recall anything that he asked you?

A. I think it was about time she was getting stuff signed off in her -- in her task or parallel training.

Q. Okay. And what did Eric say to you?

A. He just wanted to know what happened and was I treating her unfairly and so on. He wanted to know what happened.

Q. Okay. Did he ask specifically about a specific incident when he said, "What happened?"

A. Yeah, he wanted to know. So he had asked me about one of the employees that wasn't a SME was signing off things that only a SME, which is subject matter expert, can sign off.

And so I didn't realize that this one guy was signing off Ciara's and Patrik's paperwork. And so I had told him to stop because he wasn't a SME. He couldn't sign those off. He could train them, but a SME ultimately has to sign off.

Q. Okay. The -- so is the issue about the SME signing off on the paperwork, was that the issue that Eric brought to your attention?

A. The one I know about, yes.

Q. Okay. And who was the person who was

signing off on the paperwork who was not a SME?

A. Chris Salas.

Q. Chris Salas.

And did you ever white out Chris' signature from Ciara's paperwork?

A. Sure.

Q. Okay. Did you white it out from Patrik's paperwork?

A. I didn't know he was signing off Patrik's paperwork also at the time.

Q. Okay. Did you ever learn that?

A. Yeah.

Q. Okay. And once you learned it, did you white out Chris' name on Patrik's paperwork?

A. No, because Grayson Hilderbrand, the supervisor who decides who becomes a SME, came up to me and he decided later on that day that we were going to make Chris a SME.

Q. Did Chris --

A. Then I knew about Patrik's paperwork later on because she didn't tell me that he was signing off Chris' paperwork -- Patrik's paperwork also.

Q. Okay. How -- is there a documentation that tracks who's a SME?

A. Yeah.

Q. And then did you white out the names, Chris' name?

A. Yeah.

MR. LAFAYETTE: You just asked him that.

MS. SMALLETS: Can I get the events in sequential order which I'm entitled to do?

MR. LAFAYETTE: You can keep saying, "I'm entitled to do," like you just did, but that doesn't make it right, okay? I'm making my objection. And you keep trying to bully me into not making my objection.

My objection is is asked and answered. You continue to do it. And if you do it, I will call you on it. And just because you then -- and you don't have to comment and say anything. All you need to do is move on. Stop trying to bully me, okay?

MS. SMALLETS: Are you finished?

MR. LAFAYETTE: I'm done. Move on, please.

BY MS. SMALLETS:

Q. Did -- what was Ciara's response when you said -- when you whited out Chris' name?

A. I don't remember if she even had a response. I just told her she needed to get a SME's

signature.

Q. Did -- who was the next person you had a conversation with regarding the -- the sign-off issue?

A. Who was the next person?

Q. Did you talk to Eric next or did you talk to someone in between?

MR. LAFAYETTE: I'm not -- I'm lost by the question. Who's the first person? I'm lost.

MS. SMALLETS: Well, he said he talked to Chris and then he said he talked to Ciara.

MR. LAFAYETTE: Okay. That's what you're asking, who -- who did he talk to after Chris and Ciara? Is that --

MS. SMALLETS: Yes.

MR. LAFAYETTE: Go ahead.

THE WITNESS: Okay. So at this point in time, I -- I'm no longer her boss or -- I'm now involved in the turnaround. I'm handling 30, 40, 50 permits at this time. I've got a thousand contractors coming in the gates that I'm responsible for. I'm responsible for anything -- emergency situations that may hit. All these things.

I can't remember her reaction that day when I whited out those things.

could have signed off?

A. If we would have went that far, yeah.

Q. Okay. Is there any consequence to an employee of not having that paper signed off on?

MR. LAFAYETTE: Objection.

THE WITNESS: Yeah.

MR. LAFAYETTE: "Consequence" is vague and ambiguous.

THE WITNESS: Can you rephrase that --

BY MS. SMALLETS:

Q. Sure.

A. -- please?

Q. Is there --

MR. LAFAYETTE: A risk?

MS. SMALLETS: No. That's actually not the word I'm looking for.

MR. LAFAYETTE: I know, but it's the one I think you should use to get the answer you need.

BY MS. SMALLETS:

Q. Is there any benefit to the employee of having that paperwork signed off on?

MR. LAFAYETTE: Benefit?

THE WITNESS: Yeah, they get qualified on the --

BY MS. SMALLETS:

Q. Okay.

(Reporter clarification.)

THE WITNESS: Qualified on the unit.

BY MS. SMALLETS:

Q. Is that the last piece of paper they need to fill out to get qualified?

A. No.

Q. What happens sequential -- what paper --

A. That's like the middle of the road towards -- the middle to two-thirds.

Q. Okay. What paperwork?

A. The final exam and then the off-spec walk-through is -- is the final.

Q. So the final exam and off-spec walk-through happened after?

What -- what is the SME sheet? What -- what is that, because that's really not what it's called?

A. The SME sheet is a list of people that are -- that the off-spec says are qualified to sign people off in the training.

Q. I'm sorry. The paperwork that the SMEs are signing, what's that called? Is that the parallel?

THE WITNESS: But I think that might have --

MR. LAFAYETTE: I think I've got a problem, though. If I look at 461 --

MS. SMALLETS: Yeah.

MR. LAFAYETTE: -- it says, "Parallel training checklist complete." That looks like a three, 2316. Down at the bottom of the page. And then I'm seeing these May 23s. And there's stuff in these other parts of this document.

Do you see what I'm looking at?

MS. SMALLETS: Let's go off the record.

MR. LAFAYETTE: Okay. We'll go off the record.

THE VIDEOGRAPHER: Off the record at 4:41.

(Whereupon, a brief recess was taken.)

THE VIDEOGRAPHER: Back on the record at 4:53.

BY MS. SMALLETS:

Q. Okay. So we're looking at Exhibit 5. Are you familiar with what that document is?

MR. LAFAYETTE: The objection is overbroad as phrased.

You mean the form of the document?

MS. SMALLETS: Yeah, the form of the document. I'm not asking about you -- the -- about the handwriting on the document.

THE WITNESS: Yes.

BY MS. SMALLETS:

Q. Okay. And what is that document?

A. A parallel training checklist.

Q. Okay. And if you look at the second, third, and fourth pages, it's filled out for Ciara Newton.

Do you see that?

A. Uh-huh.

Q. And there are a number of initials here for trainers.

Do -- is this the document that you whited out the trainer -- the trainer initials on?

A. Yes.

MR. LAFAYETTE: Objection. Vague and ambiguous as phrased.

Go ahead.

BY MS. SMALLETS:

Q. Yes. Okay.

And you white -- you whited out the CBS initial; is that right?

A. Uh-huh.

Q. Okay. And that's Chris Salas' initials?
A. I believe so, yeah. I don't know what his middle name is.
Q. Okay. Did you white out any other initials?
A. I don't recall.
Q. Do you recognize any of the other initials on this page?
A. Yeah, they're mine.
Q. So the initials next to, "Demonstrate how to put the control valve and hand wheel," that's your initials on 462?
A. 462. "Demonstrate" -- yes.
Q. And the one below, is that yours too?
A. Yes.
Q. And, "Show where to line up 300" --
A. Yes.
Q. Those both are yours?
A. Yep.
Q. What about the one below that, the what-if scenario?
A. I think that one is Cameron or -- or Chuck. They both have the same initials.
Q. Okay.
A. But it's got -- it's got to be Cameron.

BY MS. SMALLETS:

Q. Okay. Were you supervising Ciara in March of 2016?

A. Even though I went back on shift at --

Q. No, no, different question. I'm not asking about April. I'm asking in March.

A. Yeah.

Q. Before you went back --

A. Even though I went back on shift, I still signed off their stuff because they were in the same room as us.

Q. Okay.

A. So I would try to help them out and sign them off.

Q. Okay. So before you went back on shift --

A. Okay.

Q. -- during that six to seven-week period were you supervising Ciara?

MR. LAFAYETTE: Objection. Calls for a legal conclusion.

THE WITNESS: During the time we were in classroom I was supervising Ciara.

BY MS. SMALLETS:

Q. Okay. Okay. And so but you're saying that -- that the -- that these April dates you may

a -- it says "immediate supervisor."

Do you know who that is?

A. Which -- where are you talking about?

MR. LAFAYETTE: 432.

MS. SMALLETS: The final page.

MR. LAFAYETTE: 432.

THE WITNESS: Oh, I'm sorry.

MS. SMALLETS: Sorry.

THE WITNESS: I was on the wrong page.

Yes.

BY MS. SMALLETS:

Q. Who is that?

A. Donny Goff. He must have been -- she must have been on his team when he -- she qualified.

Q. Okay.

A. Ashton's last name is Elzy. Sorry, I just remembered.

Q. Elzy?

A. If you want to write that down.

Q. Thank you.

(Whereupon, Exhibit 7 was marked for identification.)

BY MS. SMALLETS:

Q. The court reporter has given you a document that's been marked as Exhibit 7.

Can you tell me what this is?

A. This is what keeps track of every time a training employee finishes some of the paperwork, they have this signed off.

Q. Okay. Is that one of the pieces of paperwork that needs to be completed that you listed earlier or is this a way to keep track of all those pieces of paperwork?

A. This comes in with all the final paperwork.

Q. Okay.

A. To show that they've completed everything.

Q. Okay. Do you know who A. Green is?

A. Andrew Green.

Q. And who's he?

A. He's a board operator of ours.

Q. Okay. The -- under Box 9?

A. Box 9, okay.

Q. The lab training complete.

Do you recognize that signature?

A. I do not.

Q. Okay. And then Box 10, evaluation of training form.

Do you know who signed off on that?

A. It's not necessary to complete the

REPORTER'S CERTIFICATE

I, ELAINA BULDA-JONES, CSR NO. 11720, Certified Shorthand Reporter, certify:

That the foregoing proceedings were taken before me at the time and place therein set forth, at which time the witness was put under oath by me;

That the testimony of the witness, the questions propounded, and all objections and statements made at the time of the examination were recorded stenographically by me and were thereafter transcribed;

That a review of the transcript by the deponent was requested;

That the foregoing is a true and correct transcript of my shorthand notes so taken.

I further certify that I am not a relative or employee of any attorney of the parties, nor financially interested in the action.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Dated this 16th day of March, 2018.

ELAINA BULDA-JONES, CSR 11270

UNITED STATES DISTRICT COURT

FOR THE NORTHERN DISTRICT OF CALIFORNIA

OAKLAND DIVISION

CIARA NEWTON,

Plaintiff,

vs.

CASE NO.
4:17-cv-03961-YGR

EQUILON ENTERPRISES, LLC dba
SHELL OIL PRODUCTS US,

Defendant.
_____/

VIDEO DEPOSITION OF

JEFFREY FISCHER

Volume II

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CONFIDENTIAL PORTIONS EXCERPTED

Thursday, May 24, 2018

1:15 p.m.

44 Montgomery Street, Suite 550

San Francisco, CA 94104

REPORTED BY:

NOEL CARTER DEGNAN
CSR No. 6921

MR. LAFAYETTE: Just a second, please.

MS. SMALLETS: I'm simply reciting for the record what the document is.

MR. LAFAYETTE: And I simply would like, if I ask for a second, all I need is a second. Please just allow me to do that. Okay?

MS. SMALLETS: Counsel, as you -- contrary to what we previously agreed which was that we were not going to abide by the seven-hour limit, you have informed me earlier today of your intent to attempt to do so which I object to. However, if that is your intent, then I need to move as rapidly as possible.

MR. LAFAYETTE: All I asked for was a moment so that I could write down on the exhibit what you called it. That's all I asked you for. I didn't ask for all of this. It was a moment so that I didn't have to pay attention to what you were doing and write at the same time on this thing. That's all I asked for. Now, can we just move forward, please?

MS. SMALLETS: Counsel, I'd appreciate it if you don't waste my time.

Q. The court reporter has given you a document that's been marked as Exhibit 16. It's bates stamped DEF 7715 through 7717. Have you seen this document before?

A. Yes.
Q. Could you describe for me what this document is?
A. I haven't read it in about five years, but this is what we would give a mentor and put on the job posting for a new mentor that applied for the job.
Q. And is this document -- does it contain an accurate description of your duties, the duties you performed as a mentor?
MR. LAFAYETTE: Why don't you read the whole document since you haven't read it in five years and see if it does.
THE WITNESS: Thank you. Yes.
MS. SMALLETS: Q. Thank you. As a mentor, are you in charge of training documents?
MR. LAFAYETTE: Objection. The question is vague and ambiguous. Use of the term "charge of."
THE WITNESS: There are lots of different training documents that different people are in charge of. I'm in charge of any changes that the STLs or the operators suggest. I'm in charge of making those changes.
MS. SMALLETS: Q. To what documents?
A. Our department training documents.
Q. And by department are you referring to OPCEN?

Q. So either on March 1st or February -- the last day of February, whatever it was, in 2016 Ciara was at class for a few hours and then left because she had -- because she had gotten a text about her dad; is that right?

A. Yes. She got a text about her dad the first day of our class, yes.

Q. It was the first day?

A. It was the first day of class with me. Two-and-a-half hours into the first day of class with me.

Q. So let's go back to the text messages or -- do you recall how long was it until Ciara returned to class after she got that text that her dad was in a coma?

A. I do not remember the exact day that she returned to class. Eric was handling all that.

Q. Was she out for a -- we know from this text that her dad did die; correct?

MR. LAFAYETTE: Objection. Assumes facts not in evidence. Lacking in foundation with this witness.

MS. SMALLETS: Q. You were told that her father died?

A. How I found out was I got a very garbled message. Her fiancé -- it was very windy and I couldn't hear it, but I could understand her dad died. Her dad

passed away.

Q. And was Ciara -- to your recollection was she in class at any point in time between the time when she got the text that her dad was in a coma and she left up until the point in time where you got that phone message saying her dad had died?

MR. LAFAYETTE: This is becoming cumulative. He's answered this question on more than one occasion and we now burned eight minutes on that.

THE WITNESS: We're two-and-a-half hours into class and she had her phone down here and she "oh my God" and got up and left and I chased after her in the hallway. That's how I found out.

MS. SMALLETS: Q. What I'm saying is from the moment of that text until the moment you got the phone call from the fiancé had she come back to class?

MR. LAFAYETTE: You've asked this question five times already. Go ahead.

THE WITNESS: I don't remember her coming back to class at that point.

MS. SMALLETS: Q. And so then you get the phone call from the fiancé. You send this text that's the first page of Exhibit 21. Okay. And then she sends you a text -- it looks -- looks like there's a text to you, "Hi Jeff, Is it possible I could have one more day

Ciara and to the other three members of her class whose numbers we established in the previous session. I have -- each exam is 30 pages or something. I have a question about one page. For purposes of the record, do you want the full thing --

MR. LAFAYETTE: Just give me the bates ranges -- okay -- of what you're talking about. Let's give him the page.

MS. SMALLETS: Okay. Actually, it's going to take more time to disassemble after I asked that question. Okay. I'm just going to mark them.

MR. LAFAYETTE: Okay.

MS. SMALLETS: We're going to go ahead and just mark four at once.

(Exhibit 26 was marked.)

MS. SMALLETS: Here is 27.

(Exhibit 27 was marked.)

MS. SMALLETS: Here's 28.

(Exhibit 28 was marked.)

MS. SMALLETS: And here's 29.

(Exhibit 29 was marked.)

MS. SMALLETS: Q. So the court reporter has given you a series of documents. We've marked them as Exhibits 26, 27, 28 and 29. They are copies of the final written exam for each HP-2 Process Operator. The

first one is for Ciara. The next three are for individuals in your -- what we have previously established were the three individuals or Jose, Patrick and Mena. In each case it says the test was administered by Jeffrey Fischer.

Did you give this final exam to these four individuals?

A. I must have.

Q. Let's look at Exhibit 26 for a second, the first one, and run to the page that's bates stamped DEF 441.

MR. LAFAYETTE: 441?

MS. SMALLETS: Yes.

Q. I'm interested in question 26.

A. Okay.

Q. Did you mark question 26 wrong on Ciara's test?

A. I don't remember.

Q. Is that your handwriting where it says "3"?

A. No.

Q. It's not your handwriting?

A. I don't think it's my handwriting.

Q. Is it your handwriting on the first page where a score is given?

A. Yeah. I think so.

Q. Did you mark Ciara's answer to question 26

quarter of a point?

A. Minus a quarter of a point. Yeah.

Q. So then if you -- and you can do this math. Do you use -- okay. And let's go ahead and look at the other three exhibits. Again, I'm interested in question 26.

A. Which one would you like to look at?

Q. Let's look at Exhibit 3569 for a second -- Exhibit 27. The one that starts with 3569 and the page I'm interested in is 3577. This person circled 2 for 26; correct?

A. Correct.

Q. And there's no points taken off for this and we can tell that because their score on the test was a hundred percent; right?

A. (Witness nods head.)

Q. I'm sorry. You have to say yes.

A. Oh, I'm sorry. Yeah. I was reading it. Yes.

Q. And let's look at Exhibit 29, the last one I gave you. And again this person scored a hundred percent?

MR. LAFAYETTE: Which one are we looking at now?

MS. SMALLETS: Exhibit 29.

MR. LAFAYETTE: Which question?

MS. SMALLETS: The total score is what I was looking at.

Q. So this person scored a hundred percent?

A. M-hm.

Q. And they also circled two things for Exhibit 26.

MR. LAFAYETTE: You mean --

MS. SMALLETS: Correct. Question 26. I'm sorry.

MR. LAFAYETTE: That's why I keep asking you.

MS. SMALLETS: Q. So no points were taken off their score.

A. Okay.

Q. Is that right? No points were taken off their score?

A. That is correct.

Q. And --

MR. LAFAYETTE: I figured something out. I'll share it with you when we finish.

MS. SMALLETS: Okay.

MR. LAFAYETTE: We have five minutes.

MS. SMALLETS: Okay. I understand that's your position.

MR. LAFAYETTE: Yes.

MS. SMALLETS: Q. As you sit here today, can

REPORTER'S CERTIFICATE

I, NOEL CARTER DEGNAN, CSR 6921, a Certified Shorthand Reporter, do hereby certify:

That the foregoing proceedings were taken before me at the time and place therein set forth, at which time the witness was put under oath by me;

That the testimony of the witness, the questions propounded, and all objections and statements made at the time of the examination were recorded stenographically by me and were thereafter transcribed;

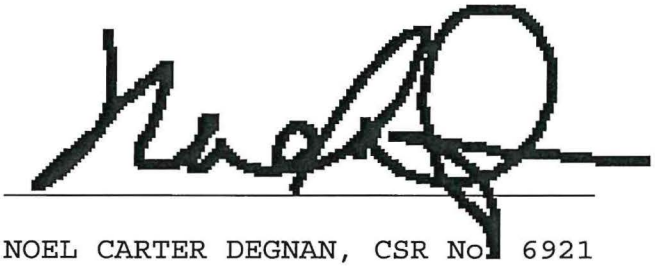
That a review of the transcript by the deponent was requested;

That the foregoing is a true and correct transcript of my shorthand notes so taken.

I further certify that I am not a relative or employee of any attorney of the parties, nor financially interested in the action.

I declare under penalty of perjury under the laws of California that the foregoing is true and correct.

Dated this 4th of June, 2018.



NOEL CARTER DEGNAN, CSR No. 6921

Exhibit 5 to the Deposition of Jeffrey Fischer, Exhibit 4 to the Declaration Sonya L. Smallets, Bates Numbered DEF 000460-DEF 000463

CONFIDENTIAL

HP-2 RELIABILITY OPERATOR CERTIFICATION FORM (Course Code: 15529)

	Activity	Lessons to Complete	Duration	Date Completed	Written Test Score	Task Demo Pass/Fail	Retest Score	Remediation Completed (Yes or N/A)	Trainer
1	HP-2 Process Overview HP-2 Process Overview Knowledge Test (Course Code: 6485)	Complete Lesson 1-6	3 days	2/29/16	100%		N/A	N/A	A. Green
2	HP-2 Reaction System HP-2 Reaction System Knowledge Test (Course Code: 11700)	Complete Lessons 1,2,3	5 days	3/2/16	100%		N/A	N/A	J Fischer
3	HP-2 Gas Purification System HP-2 Gas Purification System Knowledge Test (Course Code: 6356)	Complete Lessons 1,2,3	5 days	5/23/16	100%		N/A	N/A	C. Curran
4	HP-2 Boiler Feed Water/Steam System HP-2 Boiler Feed Water/Steam System Knowledge Test (Course Code: 8449)	Complete Lessons 1,2,3	5 days	3/24/16	100%		N/A	N/A	J. Fischer
5	HP-2 Reliability Operator Task Manuals	Complete Lesson 1-6	5 days	5/23/16		PASS	N/A	N/A	C. Curran
6	Parallel Training	Complete on Shift	5 days	5/23/16	PASS		N/A	N/A	C. Curran
7	HP-2 Reliability Operator Final Exam	80% Minimum to Pass	1 day	4-20-16	96.12		NA	Yes	C. Curran
8	Supervisor Walkthrough Evaluation	80% Minimum to Pass	1 day	4-21-16	98.1		NA	Yes	C. Curran
9	Field Lab Training Complete (QA Tech to Sign and Date)		2 hours						Kevin A-Craig
10	Evaluation of Training Form	Complete on Shift	1 days	6-7-16					N/R

EXHIBIT 7 Fischer

depobook.com

Employee Name: Ciara Newton

Routing: Send Original to:

Computer User ID: USCNF2

Department Mentor Jeff Fischer

Date Manuals Issued to Employee: 2/25/16

Capacity Assurance Manager

Estimated Completion Date: 5-23-16

HR Scheduler

Shift Team Leader Sign and Date upon Completion of Training: D. Goff

L&D Coordinator

Revised: 6/12/14 JSF

Input History _____ Job _____

OPCEN / HP2
5/23/16 / 1st QUALIFICATION

DEF 000422

DAY PROGRESS REPORT

30 Day	[redacted]	150 Day	[redacted]	270 Day
Employee Name: 6	EE# 251108	Equated Date: 1/04/16	Probationary Period Ends: 9/30/16	Month-Date-Year: 3/29/16
Department/Unit: OPCEN	Job Classification: OPERATOR START	Time in This Job: Training	[redacted]	Time Under your Supervision: > 30 days / 30 Days

PERFORMANCE FACTORS

SAFETY AND HOUSEKEEPING	X
Leader in Safety; Demonstrates Deep Involvement and Accomplishments in Working Safely, Maintaining clean, Safe Work Area, and participating in Safety Meetings.	
Follows Prescribes Safety Standards; Conscientiously Maintains Clean Work Environment, Performs Job Safely, and Participates in Safety Meetings.	X
Sometimes Must be Reminded of Safety; Shows Secondary Interest in Performing Safety and/or Maintaining Safe Environment; May not Participate in Meetings Regularly.	
Has to be Constantly Reminded of Safety Standards; Shows no Interest in Improving in This Area or in Participating in Safety Meetings.	
Cannot Rate	

COMMENTS/EXAMPLES: 6 displays a good understanding of safety rules and regulations from his years of refinery experience (Logistics).

WORK SPEED, ACCURACY, AND THOROUGHNESS	X
Works Rapidly and Extremely Accurately and Thoroughly; Pays Close Attention to Detail; Errors Rarely Found in Work.	
Consistently Works Accurately and Thoroughly at a Normal Rate; Errors Seldom Found in Work.	X
Works at an Acceptable Rate; Accuracy of Work Generally Good; Errors Sometimes Found in Work; Usually Thorough.	
Work Pace and/or Error Rate are Unacceptable.	
Cannot Rate	

COMMENTS/EXAMPLES: 6 is very attentive to detail, and his field training/testing performance has been excellent. He has shown good learning skills at a decent pace.

EXERCISING JUDGEMENT-SOLVING PROBLEMS	X
Judgement is Excellent; Almost Any Work Problem.	
Shows Good Judgement; Solves Many Work Problems By Self.	
Judgement and Problem-Solving Ability are Adequate.	
Exercises Little Judgement; Shows Little Problem Solving Ability.	
Cannot Rate	X

COMMENTS/EXAMPLES: Not enough data.

TEAMWORK, COOPERATION, AND GETTING ALONG	X
Very Effective Team Worker; Gets Along Well with Almost Everyone; Goes Out of the Way to Help Others.	
Good Team Worker; Gets Along Well With Others; Cooperative.	X
Generally Performs Satisfactorily at a Team Member; Gets Along Satisfactorily with Others; Usually Cooperative.	
Makes Little or No Effort to Work as a Team Member of Get Along with Others; Generally Uncooperative.	
Cannot Rate	

COMMENTS/EXAMPLES: 6 is exhibiting the traits necessary to be a solid team member, and gets along well with others. He is always willing to share his knowledge and experience with others. Has carried this on since being in OPCEN.

FOLLOWING ORAL/WRITTEN INSTRUCTIONS	X
Follows Instructions Exactly; Seeks Assistance or Clarification When Needed.	
Follows Instructions Closely; Asks Questions or Seeks Information When Needed.	X
Generally Follows Instructions; Usually Asks Questions or Seeks Information When Needed.	
Does Not Follow Instructions; Fails to Ask Questions or Seek Information When Needed.	
Cannot Rate	

COMMENTS/EXAMPLES: Follows directions well, not afraid to ask questions when needed.

ORGANIZING WORK	X
Planning, Organizing, and Work Habits are Outstanding.	
Plans and Organizes Work Well; Good Work Habits; Set Priorities.	X
Generally Organizes and Plans Work Well; Works Fairly Systematically; Usually Recognizes Priorities.	
Does Not Set Priorities; Haphazard Planning and Organizing; Poor Work Habits.	
Cannot Rate	

COMMENTS/EXAMPLES: 6 is very organized and exhibits good work habits.

JOB INVOLVEMENT	X	AMOUNT OF SUPERVISION REQUIRED	X
Consistently Does More Than Required; Frequently Offers Suggestions for Improvement; Seeks to Expand Capabilities and Acquire New Responsibilities.		Starts and Completes Tasks Independently; Needs Minimal Supervision.	
Does What is Required and Sometimes More; Occasionally Contributes Ideas; Shows Interest In self-improvement.		Starts and Completes Tasks with Normal Supervision.	X
Does Assigned Work Only; Shows Little Interest in Acquiring New Responsibilities.		Needs Some Extra Supervision to Complete Assigned Tasks.	
Does as Little as Possible; Shows No Concern For Performance or Desire to Improve Skills.		Needs Frequent Supervision to Complete Assigned Tasks; Does Very Little Without Being Told.	
Cannot Rate	X	Cannot Rate	
COMMENTS/EXAMPLES: Not enough data...		COMMENTS/EXAMPLES: 6 can always be counted on to stay busy whether or not the instructor is in the room. He is showing the discipline and behaviors of someone who will need minimal supervision.	
JOB KNOWLEDGE AND SKILLS	X	COMMENTS/EXAMPLES: 6 is picking up on the process at a above normal rate.	
Making Excellent Progress in Acquiring Knowledge and Skills; Proficiency is Well Above Expectations.			
Making Good Progress in Acquiring Knowledge and Skills; Level of Proficiency Meets Expectations.	X		
Making Satisfactory/Adequate Progress in Acquiring Knowledge and Skills; Proficiency Generally Meets Expectations.			
Progress in Acquiring Knowledge and Skills is Unsatisfactory; Proficiency is Well Below Expectations.			
Cannot Rate			

ATTENDANCE THIS REVIEW PERIOD >	NUMBER OF TIMES LATE > 0		NUMBER OF TIMES SICK > 0		NUMBER OF TIMES AWOL > 0

SUMMARIZE EMPLOYEES DEMONSTRATED STRENGTHS: 6 has experience working in a logistics environment and uses that to increase his understanding of the material presented, as well as to help others increase their knowledge. He picks up new information fairly quickly, and gets along well with others in the class very well.

SUMMARIZE EMPLOYEES JOB IMPROVEMENT NEEDS: Just getting started in his career at Shell. Needs to continue his progress.

DATE THIS PERFORMANCE ASSESMENT WAS DISCUSSED WITH EMPLOYEE > 4/4/16

SUMMARIZE DISCUSSION (What Employee was Told, Employees Reaction, goals, Etc...)

No issues with evaluation. Goals is to be a little for aggressive and learn all the outside jobs in 1 year or a little longer.

BASED ON YOUR KNOWLEDGE OF THE EMPLOYEES PERFORMANCE TO DATE SHOULD THE INDIVIDUAL CONTINUE AS AN EQUILON EMPLOYEE?	---X--- YES	------ NO

EXPLAIN: Performing as expected, no issues.

REVIEWERS COMMENTS

PREPARED BY SUPERVISOR (Print Name and Title) Jeff Fischer / Class Facilitator	SIGNATURE J. Fischer	DATE PREPARED 4/4/16
REVIEWED BY EMPLOYEE (Print Name and Title) 6	SIGNATURE 6	DATE PREPARED 4/6/16
REVIEWED BY /MANAGER (Print Name and Title) Eric Perez	SIGNATURE	DATE PREPARED 4/6/16

Exhibit 16 to the Deposition of Jeffrey Fischer, Exhibit 4 to the Declaration Sonya L. Smallets, Bates Numbered DEF 007715-DEF 0077117

Shell Oil Products – US Martinez Refinery OPCEN Department	**OPERATIONS CENTRAL NORTH** **Final Written Exam** **HP-2 Process Operator**	Developed By: RA Muller Approved By: LA Roque Page 1 of 17

The following information must be completed: 15529

Check One: Initial Training (Final Exam) X **or Refresher Training** _____

Name: Ciara Newton **Computer User ID:** _____ **Date:** 4/20/16

Test Administered By: Jeffrey Fischer **Score:** 96.12

Remediated Incorrect Test Questions to 100%: Yes ✓ **No** _____

Note: A score of less than 80% will require that the trainee review appropriate areas and be re-tested on all areas. A score of 80% or greater will require that the trainee be remediated on test questions answered incorrectly.

Test Instructions:

This is a written exam, the examples of question types that can be found on the test are **True or False, Multiple Choice, Matching, Fill-in-the-Blank, Sequencing, Graphical Interaction, Drawing Completion, Yes/or No, Essay**. On Multiple Choice questions please select the Best Answer, unless the question asks for more than one answer (Identified by Select the 2 best answers, Select all that apply, etc.)

Example Test Questions:

1. The 1973 National League Cy Young Award winner was:
___a. Tom Seaver
___b. Juan Marichal
___c. Bob Gibson
X d. Nolan Ryan

2. The number of lifetime home runs by Henry Aaron is:
(b.) 660
c. 714
d. 755
e. 785

3. (True) or False:

The 1968 Heisman Trophy winner was none other than O.J. Simpson.

EXHIBIT 26
WIT: Fischer
DATE: 5-24-18
NOEL DEGNAN, CSR 6921

This form and test should be attached to the Initial Training Certification Form and follow the routing slip on the Certification form.

MODULE #4 HYDROGEN PLANT FEED GAS SYSTEM

1. What is the purpose of HP-2?

   a. To remove H2S from process gas streams in the various conversion units in the Complex.
   b. To produce hydrogen for use in the various hydrogen consuming units in the Complex.
   c. To create 340# steam for use in various units in the complex.
   d. To remove sulfur and nitrogen from various gas oil streams.

2. The three main Feed Gasses to HP-2 are:

   a. Sats Dry Gas from the Sats Gas plant in D/H.
   b. PG&E Natural Gas from Utilities.
   c. Refinery Fuel Gas from Utilities.
   d. DEA Acid Gas from SRF#3.
   e. Coker Dry Gas from the Flexicoker.
   f. Flexigas (FXG) from the Flexicoker.

3. The purpose of the Feed Gas Compressors J-205 and J-206 are to:

   a. circulate already reacted Process Gas back to the inlet of the Hydrotreater.
   b. control the temperature of the Feed Gasses by circulating the flow through the Kickback Loop.
   c. raise the pressure of the Feed Gas to approximately 350 psig so that the Feed Gas can enter the process.
   d. control the temperature of the F-104 outlet temperature by varying the amount of Feed Gas.

4. The purpose of Pressure Controller PC-610 is to:

   a. control the temperature of the Process Gas going to the Hydrotreater V-1103.
   b. control the Feed Gas flow to Furnace F-104 by circulating more or less flow through the Kickback Loop.
   c. control the temperature of the Feed Gas by circulating more or less flow through the Kickback Loop.
   d. control the suction pressure of Feed Gas Compressors J-205/205.

MODULE # 5 HYDROTREATER AND SULFUR REMOVAL

5. What is the purpose of the Hydrotreater V-1103?

   Circle the Two that apply.

   a. To remove water from the Feed Gas.
   b. To convert any olefins in the Feed Gas to saturated gasses (ethane, propane).
   c. To separate the Coker Dry Gas from the other HP-2 feed streams.
   d. To convert sulfur compounds in the Feed Gas, in the presence of hydrogen (H2) to hydrogen sulfide (H2S).
   e. To remove nitrogen and ammonia from the Feed Gas.

6. What is the purpose of the Hydrotreater Recycle System?

   a. To raise the pressure of the Recycle Gas to approximately 290 psig so that the Recycle Gas can enter F-104.
   b. To maintain a flow of already treated gas back to the inlet of the Hydrotreater for diluting the Feed Gas flow through the Hydrotreater.
   c. To maintain a flow a process gas to the inlet of Caustic/Water Wash Column C-225.
   d. To cool the vapors entering the Caustic/Water Wash Column C-225 to a low enough temperature for optimum H2S removal.

7. The purpose of the Recycle Compressors J-207 and J-208 is to:

   a. To raise the pressure of the Recycle Gas to approximately 300 psig so that the Recycle Gas can enter F-104.
   b. To maintain a flow of already treated gas back to the inlet of the Hydrotreater for diluting the Feed Gas flow through the Hydrotreater.
   c. To maintain a flow a process gas to the inlet of Caustic/Water Wash Column C-225.
   d. To cool the vapors entering the Caustic/Water Wash Column C-225 to a low enough temperature for optimum H2S removal.

[redacted] How is the Hydrotreater outlet temperature controlled?

   a. By TIC-172 which controls the flow of Recycle Gas that either bypasses or goes through E-1203 the Hydrotreater Recycle Cooler.
   b. By TIC-170 which controls the flow of cooling water to E-1203 the Hydrotreater Recycle Cooler.

c. By the Jacket Cooling Water system on J-207 and J-208.
d. By TIC-170 which controls the flow of treated gas, or diluent, back into the inlet of V-1103

9. The purpose of the Caustic/Water Wash Column C-225 is to:

a. convert any sulfur compounds in the Feed Gas to H2S before the gas goes to the Zinc Oxide Guard Beds.
b. remove most of the H2S from the Feed Gas before the gas goes to the Zinc Oxide Guard Beds.
c. add caustic to the Feed Gas to aid in the Steam Methane Reforming that takes place in F-104.
d. remove nitrogen and ammonia from the Feed Gas.

10. What is the purpose of the Zinc Oxide Guard Beds V-1104/V-1105?

a. To remove all remaining sulfur compounds and/or H2S from the Feed Gas before the gas enters Reforming Furnace F-104.
b. To convert the remaining sulfur compound in the Feed Gas to H2S before the gas enters Reforming Furnace F-104.
c. To remove entrained caustic from the Feed Gas before the gas enters Reforming Furnace F-104.
d. To convert any CO in the Feed Gas to CO2 before the gas enters Reforming Furnace F-104.

11. Why must ALL H2S be removed from the Feed Gas before it flows to F-104?

a. Because H2S is a poison to the HTS catalyst
b. Because H2S is harmful to the reforming catalyst in the heater tubes.
c. Because environmental regulations prohibit emitting ANY H2S from F-104's stack.
d. To allow the H_2S to be recycled back to the front end of the unit.

MODULE #6 STEAM REFORMER FURNACE F-104 PROCESS FLOWS

10. The purpose of Feed Gas Preheat Exchanger E-1206 is to:

a. preheat the 340# Process Steam before it joins the Process Gas flow upstream of F-104.
b. preheat the Steam/Feed Gas Mixture on the tube side by exchanging heat with hot Furnace Effluent on the shell side of the exchanger.
c. create 650# steam by exchanging heat with Boiler Feed Water on the shell side and HTS effluent on the tube side of the exchanger.

11. What is the purpose of the 300 psig nitrogen that ties into the feed gas line before entering F-104?

a. It is used during start-ups and shutdowns to maintain the back end of the plant at a high enough pressure to continue circulating MP from the Contactor to the Stripper
b. It is used to help cool the flue gas exiting the F-104 stack during normal operation.
c. It is used during start-ups and shutdowns to maintain the front end plant pressure and provide a flow through F-104 tubes to cool off the catalyst.
d. It is used while at low feed rate to aid in the Steam Methane Reforming.

12. The purpose of Steam Reformer F-104 is to:

a. convert the Feed Gas/Steam Mixture to mostly methane (CH4) and nitrogen (N2).
b. create 340# steam for use in various conversion units in the Complex..
c. heat the Feed Gas/Steam Mixture to a high enough temperature for the reaction in the Hydrotreater to occur.
(d.) convert the Feed Gas/Steam Mixture to mostly hydrogen (H2), carbon monoxide(CO) and carbon dioxide (CO2).

13. What are the four necessary components for the reforming conversion in F-104?

Circle the four that apply.

(a.) Feed Gas
b. Caustic
(c.) Source of heat
d. H2S
(e.) Nickel catalyst
(f.) 340# steam
g. Nitrogen

14. How is the 340 psig Process Steam flow controlled?

a. It is temperature controlled by TC-253, reset by F-104 outlet temperature.
(b) It is ratio controlled by RC-243, reset by the Feed Gas flow.
c. It is on level control, reset by V-1106, 650# steam drum level.

MODULE #7 SHIFT CONVERSION SYSTEM

15. The purpose of the High Temperature Shift (HTS) Converter V-1108 is to:

a. convert the sulfur compounds in the Process Gas into H2S.
b. convert all off the carbon monoxide (CO) in the Process Gas into Methane and hydrogen.
(c) convert approximately three quarters of the carbon monoxide (CO) in the Process Gas into carbon dioxide (CO2) and hydrogen.
d. convert any methane in the Process Gas into hydrogen.

16. (True) or False

The reaction in the LTS is exothermic.

MODULE #8 MP SOLUTION CONTACTOR, WATER WASH COLUMN AND METHANATOR

17. The purpose of the MP Solution Contactor is to:

a. strip CO2 from the Rich MP solution making it Lean MP solution so that it can be reused.
b. remove carbon dioxide from the Process Gas by scrubbing it with a Lean MP solution.
c. wash, or remove any MP solution entrained in the Process Gas.
d. remove H_2S from the Process Gas by scrubbing it with a Lean MP solution.

18. What is the purpose of the 300 psig nitrogen line going to the Process Gas line up-steam of Water Wash Column C-228?

a. To cool the Process Gas exiting the MP Contactor
b. To purge the Water Wash Column to the flare.
c. To remove any entrained MP in the Process Gas exiting the MP Solution Contactor.
d. To maintain pressure on the back end of the plant when HP-2 is split during a start-up or shutdown.

19. The purpose of the Water Wash Column C-228 is to:

a. remove any MP Solution entrained in the Process Gas.
b. remove carbon dioxide from the Process Gas.
c. cool the Process Gas stream before it enters the Methanator.
d. remove caustic from the Process Gas.

20. Why must all of the MP Solution be removed from the Process Gas before it enters the Methanator?

a. Because it is more economical to recover the MP Solution and recycle it to the MP Stripper to be used again.
b. Because MP solution is a Methanator Catalyst poison.
c. Because the Oxazolidone content of the MP will react with the Methanator catalyst to form Nickel Carbonyl, a toxic gas.
d. Because environmental regulations do not allow any MP solution to be in finished Hydrogen.

21. The purpose of the Methanator is to:

a. convert any entrained MP solution in the Process Gas to carbon dioxide (CO2).
b. remove any residual H2S from the Process Gas
c. convert the residual carbon monoxide (CO) and carbon dioxide (CO2) in the Process Gas to methane (CH4).
d. convert the residual methane (CH4) in the Process Gas to hydrogen (H2).

22. Why must most of the CO and CO2 in the Process Gas be converted to methane before it leaves HP-2?

a. Because CO and CO2 are poisons to the Methanator catalyst
b. Because CO and CO2 are catalyst poisons for the units that use our product hydrogen.
c. Because environmental regulations do not allow CO and CO2 to be processed in the downstream units that use our product hydrogen.
d. None of the above.

23. Where can the 200# product hydrogen from HP-2 be routed?

Check the three that apply.

a. The 200# Hydrogen Header to LOP.
b. The Flexicoker Gas Plant.
c. The atmosphere via PIC-399
d. The refinery Fuel Gas Blend Drum in Utilities.
e. The Depropanizer Column in the Dimersol.
f. The refinery Flexigas (FXG) header.

MODULE #9 FEED GAS COMPRESSORS J-205 AND J-206 AND RECYCLE COMPRESSORS J-207 AND J-208

24. What are the two different lubrication systems for Feed Gas Compressors J-205/J-206?

Circle the two that apply.

a. The Jergenson Lube Oil System.
b. The McCord Lube Oil System.
c. The D. J. Goff Lube Oil System.
d. The Crankcase or Main Lube Oil System.

25. The purpose of the Feed Gas Compressors' Jacket Cooling Water System is to:

(a.) cool the compressor cylinders by providing a means of removing heat caused by compression.
b. cool the Process Gas exiting the Feed Gas Compressors with cooling water.
c. cool the circulating crankcase lube oil.
d. none of the above.

26. Which of the following conditions will cause the Protective Instrument Systems ES-2 for J-205 and ES-3 for J-206 to shut down the compressors?

Circle the ~~two~~ Three that apply.

(a.) High compressor discharge temperature.
b. High F-104 outlet temperature.
c. High liquid level in V-1112 First Interstage KO Vessel.
(d.) High liquid level in V-1100 Feed Gas KO Drum.
e. Low Hydrotreater outlet temperature.
(f.) Bar over Jack

MODULE # 10 REFORMER HEATER F-104 FUEL GAS AND FXG FLOWS

27. The two fuels used to fire Heater F-104 are:

a. Flexigas (FXG) and Natural Gas.
b. Refinery Fuel Oil and Flexigas (FXG).
(c.) Refinery Fuel Gas and Flexigas (FXG).
d. Flexigas (FXG) and Hydrogen.

28. What is the purpose of the Pilots in F-104?

a. To control the pressure of the HP-2 fuel gas system.
(b.) To ensure that a flame source is always present in F-104.
c. To control F-104 outlet temperature.
d. None of the above.

29. What is the maximum allowable tube skin temperature in F-104?

a. 1000°F.
b. 2500°F.
c. 550°F.
(d.) 1750°F.

30. The following are the hazards of Flexigas (FXG):

Circle the two that apply.

a. Carbon Monoxide (CO)
b. Hydrogen Sulfide (H2S)
c. Ammonia (NH3)
d. High Pressure
e. Sulfur Dioxide (SO2)

31. The following are the precautions you must take when you go under F-104 for intrusive work:

Circle all that apply.

a. Wear a flash hood.
b. Wear a flash jacket.
c. Wear flash gloves.
d. Carry a radio tuned to A-5 – OpCen1.
e. Obtain verbal approval from the HP-2 Board Operator.

MODULE #11 BOILER FEED WATER AND STEAM SYSTEMS

32. The purpose of the Boiler Feed Water (BFW) System is to:

a. supply treated water for the Hydrotreater Recycle Cooler.
b. supply treated water for the 650 psig Steam Drum in HP-2.
c. supply treated water for the MP and water wash systems.
d. supply treated water for the Feed Gas Compressors' jacket cooling water system.

33. What is the purpose of Deaerator V-1117A?

a. Provide surge capacity for the Boiler Feed Water before it enters V-1106 650 # Steam Drum.
b. Remove carbon dioxide and oxygen from the process water using 50 psig steam as a stripping agent.
c. Cool the Boiler Feed Water before it enters V-1106 650 # Steam Drum.
d. None of the above.

34. What is the purpose of waste heat boiler E-1207?

a. Cool the Reformer (F-104) Effluent by exchanging heat with 340# Process Steam.
b. Cool the HTS Effluent by exchanging heat with Boiler Feed Water.
c. Make 650# steam by exchanging heat between Boiler Feed Water and Reformer (F-104) Effluent.
d. Preheat the Process Gas before it enters Reformer Furnace F-104.

35. The purpose of Coil #2 in the convection section of F-104 is to:

a. preheat Flexigas (FXG).
b. preheat Boiler Feed Water going to the 650 # Steam Drum..
c. exchange heat with water from the 650 # Steam Drum to generate steam.
d. superheat the 650 # steam leaving the 650 # Steam Drum.

36. The purpose of Coil #4 in the convection section of F-104 is to:

a. preheat Flexigas (FXG)
b. preheat Boiler Feed Water going to the 650# Steam Drum.
c. Exchange heat with water from the 650 # Steam Drum to generate steam.
d. Superheat the 650 # steam leaving the 650 # Steam Drum.

37. What is the purpose of 340# steam in HP-2?

a. Supply motive force to drive the Coil #3 Circulation Turbine.
b. Supply motive force to drive the MP Circulation Turbine.
c. Used as Process Steam in F-104 help the Reforming Process take place.
d. Supplies Utility Steam to the HP-2 Utility Stations.

MODULE #12 WATER WASH AND MP SYSTEM

38. What is the purpose of the Water Wash System in HP-2?

a. Provide cooling water for the Feed Gas Compressors' Jacket Cooling Water System.
b. To remove CO2 from the Process Gas before it enters the Methanator.
c. To cool the Product Hydrogen Gas downstream of the Methanator.
d. To remove any MP Solution entrained in the Process Gas downstream of the MP Solution Contactor

39. What must you do to obtain emergency Process Water if both Process Water P-5168 and P-5169 fail?

a. Forget that, just initiate ES-1 to immediately shutdown HP-2.
b. Cut feed to minimum and lower F-104 outlet temperature to 1000°F.
c. Open the block valve on the 300 psig condensate line at E-1222 outlet and block in the discharge of P-5168 and P-5169.
d. Line up the First and Second Interstage KO Drums to the Process Sewer.

40. The purpose of the MP Contactor is to:

a. Convert any Carbon Monoxide (CO) in the Process Gas to Carbon Dioxide (CO2).
b. Remove H2S from the Process Gas.
c. Remove Carbon Dioxide (CO2) from the Process Gas.
d. Convert any Carbon Dioxide in the Process Gas to Methane.

41. What is the purpose of the MP Stripper C-227?

a. To strip the CO2 from the Rich MP.
b. To strip the H2S from the Rich MP.
c. To strip the MP from the Process Gas.
d. None of the above.

42. What is the purpose of Hand Indicator Controller HIC-364 and HIC-365 located on the east side of the MP Stripper C-227?

a. To isolate the front end of the plant from the back end of the plant during start-ups and shutdowns.
b. To control the pressure of the back end of the plant when the plant is split.
c. To quickly reduce the heat input to the MP Stripper to prevent or minimize a boil-over in the Stripper.
d. To control the temperature of the Process Gas exiting the MP Stripper.

43. What are the two different heat sources to the MP Stripper Reboilers?

Circle the two that apply.

a. 650 psig steam
b. Boiler Feed Water exiting Coil #2 in the convection section of F-104.
c. Process Gas exiting the Low Temperature Shift Converter (LTS Effluent).
d. 50 psig steam.
e. Debutanizer Bottoms from the Flexicoker Gas Plant (KGP).

MODULE #13 SAMPLING AND TESTING

42. The purpose of testing the pH in C-225's Water Wash Section is to:

a. determine the amount of H2S in the Process Gas stream exiting the Hydrotreater V-1103.
b. determine if there is caustic carryover from the column's caustic section.
c. determine the amount of H2S in the Process Gas stream exiting C-225.
d. Control the acid injection rate into C-225.

43. True or False:

You must wear goggles and rubber gloves when pulling a MP or caustic sample

44. (True) or False:

Information on sampling procedures can be found in the FRM (Field Requirements Manual) F(F) –1.

MODULE #14 READINGS, PROCEDURES, AND THE OIL MIST LUBRICATION SYSTEM

45. The purpose of a pressure safety valve (PSV) is to:

a. control the pressure on a column or vessel.
(b.) protect a vessel or piece of equipment from damage due to over-pressuring by opening to relieve the excess pressure.
c. protect a vessel or piece of equipment from damage due to over-pressuring by closing the process flow to that piece of equipment.
d. Maintain a positive pressure in the flare header, thereby preventing the build-up of hydrocarbon vapor in the flare header.

46. The purpose of the Oil Mist Lubrication System is to:

a. lubricate the cylinders and packing on the Recycle and Feed Gas Compressors.
b. lubricate fan bearings throughout the unit.
(c.) lubricate the bearings on pumps located throughout the unit.
d. lubricate valve stems for ease of operation.

47. True or (False:)

a. It is important that we never steam out or use a steam lance on any piece of equipment that contains caustic because the equipment may have a pressure rating of less than 160 psig, which is the pressure of our utility steam.

MODULE #15 CWT-50, CPI, FLARES AND EMERGENCY POWER GENERATOR

47. What is the purpose of Cooling Water Tower CWT-50?

a. To cool the blowdown water before it is routed to the basins.
b. To provide cool, treated boiler feed water for use in V-1106 650 # Steam Drum.
(c.) To provide water to control temperatures by transferring heat from hot processes into the cooling water and then cooling the water for reuse.

48. What is the purpose of the concentrated sulfuric acid addition to the Cooling Water Tower Basin?

a. To control foaming in the Cooling Water Tower.
b. To control the temperature of the Cooling Water.
c. To prevent corrosion in exchanger tubes.
(d.) To control the pH of the Cooling Water and prevent scale.

49. The purpose of cooling water blowdown is to:

(a.) control the conductivity of the water in the correct range by removing a slipstream of cooling water containing contaminants which is replaced with fresh makeup water.
b. control the level of the cooling tower basin.
c. control foaming in the Cooling Water Tower.
d. maintain clean cooling tower screens to prevent plugging.

50. The purpose of the Corrugated Plate Interceptor (CPI) on the main Process Sewer from the OpCen units is to:

a. separate process sewer liquid from storm sewer liquid.
(b.) separate the solids and oil from the sewer water flow.
c. cool liquids in the process sewer before they are routed to the basins.
d. contain all the process sewer liquid from OpCen processing units until they can be removed by a vacuum truck.

51. (True) or False:

The purpose of the decant boxes at the CPI is to allow further residence time for the settling out of solids.

MODULE #16 HYDROGEN PLANT EMERGENCY PROCEDURES

52. What is the primary objective during any emergency?

a. To keep the unit operating.
(b.) To bring the unit to a safe condition as quickly as possible.
c. To evacuate the refinery.
d. To blame it on someone else.

True or (False:)

To evacuate personnel from your unit area during an emergency the Board Operator will

activate the Flare Area Emergency Evacuation Alarm located on the Sulfur Plant #3 Board in the Control Center.

53. True or (False):

During an HP-2 Feed Outage, the plant must be split by opening MOV-3215 on the 60% bypass around the MP Stripper Reboilers.

54. (True) or False:

The pilots to F-104 will remain lit during an ES-1 outage.

55. When ES-1 is activated, the following will automatically occur:

Circle the four that apply

(a.) All the feed gas control valves trip closed.
(b.) The fuel gas and the Flexigas control valves to F-104 trip closed.
c. The Recycle Compressors J-207 and J-208 shut down.
d. The Emergency Power Generator is started.
(e.) TIC-166 bypasses the Hydrotreater feed around E-1208 to cool the Hydrotreater inlet as much as possible.
f. The pilots in F-104 shut off.
(g.) The Feed Gas Compressors J-205 and J-206 shut down.

56 The purpose of HIC-471 downstream of the Methanator KO Drum is to:

a. split the plant.
b. quickly remove heat from the MP Stripper.
(c.) isolate HP-2 from the 200# Hydrogen header.
d. bypass the Methanator.

END OF TEST

Shell Oil Products – US Martinez Refinery OPCEN Department	**OPERATIONS CENTRAL NORTH** **Final Written Exam** **HP-2 Process Operator**	Developed By: RA Muller Approved By: LA Roque Page 1 of 17

The following information must be completed: 15529

Check One: Initial Training (Final Exam) ✓ **or Refresher Training** _____

Name: 6 **Computer User ID:** 6 **Date:** 4/7/16

Test Administered By: Jeffrey Fischer **Score:** 100 %

Remediated Incorrect Test Questions to 100%: Yes _____ **No** N/A

Note: A score of less than 80% will require that the trainee review appropriate areas and be re-tested on all areas. A score of 80% or greater will require that the trainee be remediated on test questions answered incorrectly.

Test Instructions:

This is a written exam, the examples of question types that can be found on the test are **True or False, Multiple Choice, Matching, Fill-in-the-Blank, Sequencing, Graphical Interaction, Drawing Completion, Yes/or No, Essay**. On Multiple Choice questions please select the Best Answer, unless the question asks for more than one answer (Identified by Select the 2 best answers, Select all that apply, etc.)

Example Test Questions:

1. The 1973 National League Cy Young Award winner was:
___a. Tom Seaver
___b. Juan Marichal
___c. Bob Gibson
___d. Nolan Ryan

2. The number of lifetime home runs by Henry Aaron is:
b. 660
c. 714
d. 755
e. 785

3. True or False:

The 1968 Heisman Trophy winner was none other than O.J. Simpson.

EXHIBIT 27
WIT: Fischer
DATE: 5-24-18
NOEL DEGNAN, CSR 6921

This form and test should be attached to the Initial Training Certification Form and follow the routing slip on the Certification form.

MODULE #4 HYDROGEN PLANT FEED GAS SYSTEM

1. What is the purpose of HP-2?

   a. To remove H2S from process gas streams in the various conversion units in the Complex.
   (b) To produce hydrogen for use in the various hydrogen consuming units in the Complex.
   c. To create 340# steam for use in various units in the complex.
   d. To remove sulfur and nitrogen from various gas oil streams.

2. The three main Feed Gasses to HP-2 are:

   (a) Sats Dry Gas from the Sats Gas plant in D/H.
   (b) PG&E Natural Gas from Utilities.
   c. Refinery Fuel Gas from Utilities.
   d. DEA Acid Gas from SRF#3.
   (e) Coker Dry Gas from the Flexicoker.
   f. Flexigas (FXG) from the Flexicoker.

3. The purpose of the Feed Gas Compressors J-205 and J-206 are to:

   a. circulate already reacted Process Gas back to the inlet of the Hydrotreater.
   b. control the temperature of the Feed Gasses by circulating the flow through the Kickback Loop.
   (c) raise the pressure of the Feed Gas to approximately 350 psig so that the Feed Gas can enter the process.
   d. control the temperature of the F-104 outlet temperature by varying the amount of Feed Gas.

4. The purpose of Pressure Controller PC-610 is to:

   a. control the temperature of the Process Gas going to the Hydrotreater V-1103.
   (b) control the Feed Gas flow to Furnace F-104 by circulating more or less flow through the Kickback Loop.
   c. control the temperature of the Feed Gas by circulating more or less flow through the Kickback Loop.
   d. control the suction pressure of Feed Gas Compressors J-205/205.

MODULE # 5 HYDROTREATER AND SULFUR REMOVAL

5. What is the purpose of the Hydrotreater V-1103?

   Circle the Two that apply.

   a. To remove water from the Feed Gas.
   (b) To convert any olefins in the Feed Gas to saturated gasses (ethane, propane).
   c. To separate the Coker Dry Gas from the other HP-2 feed streams.
   (d.) To convert sulfur compounds in the Feed Gas, in the presence of hydrogen (H2) to hydrogen sulfide (H2S).
   e. To remove nitrogen and ammonia from the Feed Gas.

6. What is the purpose of the Hydrotreater Recycle System?

   a. To raise the pressure of the Recycle Gas to approximately 290 psig so that the Recycle Gas can enter F-104.
   (b) To maintain a flow of already treated gas back to the inlet of the Hydrotreater for diluting the Feed Gas flow through the Hydrotreater.
   c. To maintain a flow a process gas to the inlet of Caustic/Water Wash Column C-225.
   d. To cool the vapors entering the Caustic/Water Wash Column C-225 to a low enough temperature for optimum H2S removal.

7. The purpose of the Recycle Compressors J-207 and J-208 is to:

   a. To raise the pressure of the Recycle Gas to approximately 300 psig so that the Recycle Gas can enter F-104.
   (b) To maintain a flow of already treated gas back to the inlet of the Hydrotreater for diluting the Feed Gas flow through the Hydrotreater.
   c. To maintain a flow a process gas to the inlet of Caustic/Water Wash Column C-225.
   d. To cool the vapors entering the Caustic/Water Wash Column C-225 to a low enough temperature for optimum H2S removal.

[redacted] How is the Hydrotreater outlet temperature controlled?

   a. By TIC-172 which controls the flow of Recycle Gas that either bypasses or goes through E-1203 the Hydrotreater Recycle Cooler.
   b. By TIC-170 which controls the flow of cooling water to E-1203 the Hydrotreater Recycle Cooler.

c. By the Jacket Cooling Water system on J-207 and J-208.
(d.) By TIC-170 which controls the flow of treated gas, or diluent, back into the inlet of V-1103

9. The purpose of the Caustic/Water Wash Column C-225 is to:

a. convert any sulfur compounds in the Feed Gas to H2S before the gas goes to the Zinc Oxide Guard Beds.
(b) remove most of the H2S from the Feed Gas before the gas goes to the Zinc Oxide Guard Beds.
c. add caustic to the Feed Gas to aid in the Steam Methane Reforming that takes place in F-104.
d. remove nitrogen and ammonia from the Feed Gas.

10. What is the purpose of the Zinc Oxide Guard Beds V-1104/V-1105?

   (a) To remove all remaining sulfur compounds and/or H2S from the Feed Gas before the gas enters Reforming Furnace F-104.
   b. To convert the remaining sulfur compound in the Feed Gas to H2S before the gas enters Reforming Furnace F-104.
   c. To remove entrained caustic from the Feed Gas before the gas enters Reforming Furnace F-104.
   d. To convert any CO in the Feed Gas to CO2 before the gas enters Reforming Furnace F-104.

11. Why must ALL H2S be removed from the Feed Gas before it flows to F-104?

   a. Because H2S is a poison to the HTS catalyst
   (b.) Because H2S is harmful to the reforming catalyst in the heater tubes.
   c. Because environmental regulations prohibit emitting ANY H2S from F-104's stack.
   d. To allow the H_2S to be recycled back to the front end of the unit.

MODULE #6 STEAM REFORMER FURNACE F-104 PROCESS FLOWS

10. The purpose of Feed Gas Preheat Exchanger E-1206 is to:

   a. preheat the 340# Process Steam before it joins the Process Gas flow upstream of F-104.
   (b) preheat the Steam/Feed Gas Mixture on the tube side by exchanging heat with hot Furnace Effluent on the shell side of the exchanger.
   c. create 650# steam by exchanging heat with Boiler Feed Water on the shell side and HTS effluent on the tube side of the exchanger.

11. What is the purpose of the 300 psig nitrogen that ties into the feed gas line before entering F-104?

   a. It is used during start-ups and shutdowns to maintain the back end of the plant at a high enough pressure to continue circulating MP from the Contactor to the Stripper
   b. It is used to help cool the flue gas exiting the F-104 stack during normal operation.
   (c.) It is used during start-ups and shutdowns to maintain the front end plant pressure and provide a flow through F-104 tubes to cool off the catalyst.
   d. It is used while at low feed rate to aid in the Steam Methane Reforming.

12. The purpose of Steam Reformer F-104 is to:

a. convert the Feed Gas/Steam Mixture to mostly methane (CH4) and nitrogen (N2).
b. create 340# steam for use in various conversion units in the Complex..
c. heat the Feed Gas/Steam Mixture to a high enough temperature for the reaction in the Hydrotreater to occur.
(d) convert the Feed Gas/Steam Mixture to mostly hydrogen (H2), carbon monoxide(CO) and carbon dioxide (CO2).

13. What are the four necessary components for the reforming conversion in F-104?

Circle the four that apply.

(a) Feed Gas
b. Caustic
(c) Source of heat
d. H2S
(e) Nickel catalyst
(f) 340# steam
g. Nitrogen

14. How is the 340 psig Process Steam flow controlled?

a. It is temperature controlled by TC-253, reset by F-104 outlet temperature.
(b) It is ratio controlled by RC-243, reset by the Feed Gas flow.
c. It is on level control, reset by V-1106, 650# steam drum level.

MODULE #7 SHIFT CONVERSION SYSTEM

15. The purpose of the High Temperature Shift (HTS) Converter V-1108 is to:

a. convert the sulfur compounds in the Process Gas into H2S.
b. convert all off the carbon monoxide (CO) in the Process Gas into Methane and hydrogen.
(c.) convert approximately three quarters of the carbon monoxide (CO) in the Process Gas into carbon dioxide (CO2) and hydrogen.
d. convert any methane in the Process Gas into hydrogen.

16. (True) or False

The reaction in the LTS is exothermic. True

MODULE #8 MP SOLUTION CONTACTOR, WATER WASH COLUMN AND METHANATOR

17. The purpose of the MP Solution Contactor is to:

    a. strip CO2 from the Rich MP solution making it Lean MP solution so that it can be reused.
    (b) remove carbon dioxide from the Process Gas by scrubbing it with a Lean MP solution.
    c. wash, or remove any MP solution entrained in the Process Gas.
    d. remove H_2S from the Process Gas by scrubbing it with a Lean MP solution.

18. What is the purpose of the 300 psig nitrogen line going to the Process Gas line up-steam of Water Wash Column C-228?

    a. To cool the Process Gas exiting the MP Contactor
    b. To purge the Water Wash Column to the flare.
    c. To remove any entrained MP in the Process Gas exiting the MP Solution Contactor.
    (d.) To maintain pressure on the back end of the plant when HP-2 is split during a start-up or shutdown.

19. The purpose of the Water Wash Column C-228 is to:

    (a) remove any MP Solution entrained in the Process Gas.
    b. remove carbon dioxide from the Process Gas.
    c. cool the Process Gas stream before it enters the Methanator.
    d. remove caustic from the Process Gas.

20. Why must all of the MP Solution be removed from the Process Gas before it enters the Methanator?

    a. Because it is more economical to recover the MP Solution and recycle it to the MP Stripper to be used again.
    (b) Because MP solution is a Methanator Catalyst poison.
    c. Because the Oxazolidone content of the MP will react with the Methanator catalyst to form Nickel Carbonyl, a toxic gas.
    d. Because environmental regulations do not allow any MP solution to be in finished Hydrogen.

21. The purpose of the Methanator is to:

a. convert any entrained MP solution in the Process Gas to carbon dioxide (CO2).
b. remove any residual H2S from the Process Gas
(c.) convert the residual carbon monoxide (CO) and carbon dioxide (CO2) in the Process Gas to methane (CH4).
d. convert the residual methane (CH4) in the Process Gas to hydrogen (H2).

22. Why must most of the CO and CO2 in the Process Gas be converted to methane before it leaves HP-2?

a. Because CO and CO2 are poisons to the Methanator catalyst
(b) Because CO and CO2 are catalyst poisons for the units that use our product hydrogen.
c. Because environmental regulations do not allow CO and CO2 to be processed in the downstream units that use our product hydrogen.
d. None of the above.

23. Where can the 200# product hydrogen from HP-2 be routed?

Check the three that apply.

(a.) The 200# Hydrogen Header to LOP.
b. The Flexicoker Gas Plant.
(c.) The atmosphere via PIC-399
(d.) The refinery Fuel Gas Blend Drum in Utilities.
e. The Depropanizer Column in the Dimersol.
f. The refinery Flexigas (FXG) header.

MODULE #9 FEED GAS COMPRESSORS J-205 AND J-206 AND RECYCLE COMPRESSORS J-207 AND J-208

24. What are the two different lubrication systems for Feed Gas Compressors J-205/J-206?

Circle the two that apply.

a. The Jergenson Lube Oil System.
(b) The McCord Lube Oil System.
c. The D. J. Goff Lube Oil System.
(d.) The Crankcase or Main Lube Oil System.

25. The purpose of the Feed Gas Compressors' Jacket Cooling Water System is to:

(a.) cool the compressor cylinders by providing a means of removing heat caused by compression.
b. cool the Process Gas exiting the Feed Gas Compressors with cooling water.
c. cool the circulating crankcase lube oil.
d. none of the above.

26. Which of the following conditions will cause the Protective Instrument Systems ES-2 for J-205 and ES-3 for J-206 to shut down the compressors?

Circle the two that apply.

a. High compressor discharge temperature.
b. High F-104 outlet temperature.
c. High liquid level in V-1112 First Interstage KO Vessel.
(d) High liquid level in V-1100 Feed Gas KO Drum.
e. Low Hydrotreater outlet temperature.
(f.) Bar over Jack

MODULE # 10 REFORMER HEATER F-104 FUEL GAS AND FXG FLOWS

27. The two fuels used to fire Heater F-104 are:

a. Flexigas (FXG) and Natural Gas.
b. Refinery Fuel Oil and Flexigas (FXG).
(c) Refinery Fuel Gas and Flexigas (FXG).
d. Flexigas (FXG) and Hydrogen.

28. What is the purpose of the Pilots in F-104?

a. To control the pressure of the HP-2 fuel gas system.
(b) To ensure that a flame source is always present in F-104.
c. To control F-104 outlet temperature.
d. None of the above.

29. What is the maximum allowable tube skin temperature in F-104?

a. 1000°F.
b. 2500°F.
c. 550°F.
(d) 1750°F.

30. The following are the hazards of Flexigas (FXG):

Circle the two that apply.

(a.) Carbon Monoxide (CO)
(b.) Hydrogen Sulfide (H2S)
c. Ammonia (NH3)
d. High Pressure
e. Sulfur Dioxide (SO2)

31. The following are the precautions you must take when you go under F-104 for intrusive work:

Circle all that apply.

(a.) Wear a flash hood.
(b.) Wear a flash jacket.
(c.) Wear flash gloves.
(d.) Carry a radio tuned to A-5 – OpCen1.
(e.) Obtain verbal approval from the HP-2 Board Operator.

MODULE #11 BOILER FEED WATER AND STEAM SYSTEMS

32. The purpose of the Boiler Feed Water (BFW) System is to:

a. supply treated water for the Hydrotreater Recycle Cooler.
(b.) supply treated water for the 650 psig Steam Drum in HP-2.
c. supply treated water for the MP and water wash systems.
d. supply treated water for the Feed Gas Compressors' jacket cooling water system.

33. What is the purpose of Deaerator V-1117A?

a. Provide surge capacity for the Boiler Feed Water before it enters V-1106 650 # Steam Drum.
(b.) Remove carbon dioxide and oxygen from the process water using 50 psig steam as a stripping agent.
c. Cool the Boiler Feed Water before it enters V-1106 650 # Steam Drum.
d. None of the above.

34. What is the purpose of waste heat boiler E-1207?

a. Cool the Reformer (F-104) Effluent by exchanging heat with 340# Process Steam.
b. Cool the HTS Effluent by exchanging heat with Boiler Feed Water.
(c) Make 650# steam by exchanging heat between Boiler Feed Water and Reformer (F-104) Effluent.
d. Preheat the Process Gas before it enters Reformer Furnace F-104.

35. The purpose of Coil #2 in the convection section of F-104 is to:

a. preheat Flexigas (FXG).
(b) preheat Boiler Feed Water going to the 650 # Steam Drum..
c. exchange heat with water from the 650 # Steam Drum to generate steam.
d. superheat the 650 # steam leaving the 650 # Steam Drum.

36. The purpose of Coil #4 in the convection section of F-104 is to:

a. preheat Flexigas (FXG)
b. preheat Boiler Feed Water going to the 650# Steam Drum.
c. Exchange heat with water from the 650 # Steam Drum to generate steam.
(d) Superheat the 650 # steam leaving the 650 # Steam Drum.

37. What is the purpose of 340# steam in HP-2?

a. Supply motive force to drive the Coil #3 Circulation Turbine.
b. Supply motive force to drive the MP Circulation Turbine.
(c) Used as Process Steam in F-104 help the Reforming Process take place.
d. Supplies Utility Steam to the HP-2 Utility Stations.

MODULE #12 WATER WASH AND MP SYSTEM

38. What is the purpose of the Water Wash System in HP-2?

a. Provide cooling water for the Feed Gas Compressors' Jacket Cooling Water System.
b. To remove CO2 from the Process Gas before it enters the Methanator.
c. To cool the Product Hydrogen Gas downstream of the Methanator.
(d) To remove any MP Solution entrained in the Process Gas downstream of the MP Solution Contactor

39. What must you do to obtain emergency Process Water if both Process Water P-5168 and P-5169 fail?

    a. Forget that, just initiate ES-1 to immediately shutdown HP-2.
    b. Cut feed to minimum and lower F-104 outlet temperature to 1000°F.
    c. Open the block valve on the 300 psig condensate line at E-1222 outlet and block in the discharge of P-5168 and P-5169.
    d. Line up the First and Second Interstage KO Drums to the Process Sewer.

40. The purpose of the MP Contactor is to:

    a. Convert any Carbon Monoxide (CO) in the Process Gas to Carbon Dioxide (CO2).
    b. Remove H2S from the Process Gas.
    c. Remove Carbon Dioxide (CO2) from the Process Gas.
    d. Convert any Carbon Dioxide in the Process Gas to Methane.

41. What is the purpose of the MP Stripper C-227?

(a) To strip the CO2 from the Rich MP.
b. To strip the H2S from the Rich MP.
c. To strip the MP from the Process Gas.
d. None of the above.

42. What is the purpose of Hand Indicator Controller HIC-364 and HIC-365 located on the east side of the MP Stripper C-227?

a. To isolate the front end of the plant from the back end of the plant during start-ups and shutdowns.
b. To control the pressure of the back end of the plant when the plant is split.
(c) To quickly reduce the heat input to the MP Stripper to prevent or minimize a boil-over in the Stripper.
d. To control the temperature of the Process Gas exiting the MP Stripper.

43. What are the two different heat sources to the MP Stripper Reboilers?

Circle the two that apply.

a. 650 psig steam
b. Boiler Feed Water exiting Coil #2 in the convection section of F-104.
(c) Process Gas exiting the Low Temperature Shift Converter (LTS Effluent).
(d) 50 psig steam.
e. Debutanizer Bottoms from the Flexicoker Gas Plant (KGP).

MODULE #13 SAMPLING AND TESTING

42. The purpose of testing the pH in C-225's Water Wash Section is to:

a. determine the amount of H2S in the Process Gas stream exiting the Hydrotreater V-1103.
(b) determine if there is caustic carryover from the column's caustic section.
c. determine the amount of H2S in the Process Gas stream exiting C-225.
d. Control the acid injection rate into C-225.

43. (True) or False:

You must wear goggles and rubber gloves when pulling a MP or caustic sample True

44. (True) or False:

Information on sampling procedures can be found in the FRM (Field Requirements Manual) F(F) –1. True

MODULE #14 READINGS, PROCEDURES, AND THE OIL MIST LUBRICATION SYSTEM

45. The purpose of a pressure safety valve (PSV) is to:

a. control the pressure on a column or vessel.
(b.) protect a vessel or piece of equipment from damage due to over-pressuring by opening to relieve the excess pressure.
c. protect a vessel or piece of equipment from damage due to over-pressuring by closing the process flow to that piece of equipment.
d. Maintain a positive pressure in the flare header, thereby preventing the build-up of hydrocarbon vapor in the flare header.

46. The purpose of the Oil Mist Lubrication System is to:

a. lubricate the cylinders and packing on the Recycle and Feed Gas Compressors.
b. lubricate fan bearings throughout the unit.
(c) lubricate the bearings on pumps located throughout the unit.
d. lubricate valve stems for ease of operation.

47. (True) or False:

a. It is important that we never steam out or use a steam lance on any piece of equipment that contains caustic because the equipment may have a pressure rating of less than 160 psig, which is the pressure of our utility steam. True

MODULE #15 CWT-50, CPI, FLARES AND EMERGENCY POWER GENERATOR

47. What is the purpose of Cooling Water Tower CWT-50?

a. To cool the blowdown water before it is routed to the basins.
b. To provide cool, treated boiler feed water for use in V-1106 650 # Steam Drum.
(c.) To provide water to control temperatures by transferring heat from hot processes into the cooling water and then cooling the water for reuse.

48. What is the purpose of the concentrated sulfuric acid addition to the Cooling Water Tower Basin?

a. To control foaming in the Cooling Water Tower.
b. To control the temperature of the Cooling Water.
c. To prevent corrosion in exchanger tubes.
(d) To control the pH of the Cooling Water and prevent scale.

49. The purpose of cooling water blowdown is to:

(a.) control the conductivity of the water in the correct range by removing a slipstream of cooling water containing contaminants which is replaced with fresh makeup water.
b. control the level of the cooling tower basin.
c. control foaming in the Cooling Water Tower.
d. maintain clean cooling tower screens to prevent plugging.

50. The purpose of the Corrugated Plate Interceptor (CPI) on the main Process Sewer from the OpCen units is to:

a. separate process sewer liquid from storm sewer liquid.
(b.) separate the solids and oil from the sewer water flow.
c. cool liquids in the process sewer before they are routed to the basins.
d. contain all the process sewer liquid from OpCen processing units until they can be removed by a vacuum truck.

51. (True) or False:

The purpose of the decant boxes at the CPI is to allow further residence time for the settling out of solids. True

MODULE #16 HYDROGEN PLANT EMERGENCY PROCEDURES

52. What is the primary objective during any emergency?

a. To keep the unit operating.
(b) To bring the unit to a safe condition as quickly as possible.
c. To evacuate the refinery.
d. To blame it on someone else.

True or (False:)

To evacuate personnel from your unit area during an emergency the Board Operator will

activate the Flare Area Emergency Evacuation Alarm located on the Sulfur Plant #3 Board in the Control Center. False

53. True or (False)

During an HP-2 Feed Outage, the plant must be split by opening MOV-3215 on the 60% bypass around the MP Stripper Reboilers. False

54. (True) or False:

The pilots to F-104 will remain lit during an ES-1 outage. True

55. When ES-1 is activated, the following will automatically occur:

Circle the four that apply

(a) All the feed gas control valves trip closed.
(b) The fuel gas and the Flexigas control valves to F-104 trip closed.
c. The Recycle Compressors J-207 and J-208 shut down.
d. The Emergency Power Generator is started.
(e.) TIC-166 bypasses the Hydrotreater feed around E-1208 to cool the Hydrotreater inlet as much as possible.
f. The pilots in F-104 shut off.
(g.) The Feed Gas Compressors J-205 and J-206 shut down.

56 The purpose of HIC-471 downstream of the Methanator KO Drum is to:

a. split the plant.
b. quickly remove heat from the MP Stripper.
(c) isolate HP-2 from the 200# Hydrogen header.
d. bypass the Methanator.

END OF TEST

Shell Oil Products – US Martinez Refinery OPCEN Department	**OPERATIONS CENTRAL NORTH** **Final Written Exam** **HP-2 Process Operator**	Developed By: RA Muller Approved By: LA Roque Page 1 of 17

The following information must be completed: 15529

Check One: Initial Training (Final Exam) ✓ **or Refresher Training** _____

Name: 9 **Computer User ID:** 9 **Date:** 04-19-2016

Test Administered By: Jeffrey Fischer **Score:** 95.23

Remediated Incorrect Test Questions to 100%: Yes ✓ **No** _____

Note: A score of less than 80% will require that the trainee review appropriate areas and be re-tested on all areas. A score of 80% or greater will require that the trainee be remediated on test questions answered incorrectly.

Test Instructions:

This is a written exam, the examples of question types that can be found on the test are **True or False, Multiple Choice, Matching, Fill-in-the-Blank, Sequencing, Graphical Interaction, Drawing Completion, Yes/or No, Essay.** On Multiple Choice questions please select the Best Answer, unless the question asks for more than one answer (Identified by Select the 2 best answers, Select all that apply, etc.)

Example Test Questions:

1. The 1973 National League Cy Young Award winner was:
___a. Tom Seaver
___b. Juan Marichal
___c. Bob Gibson
___d. Nolan Ryan

2. The number of lifetime home runs by Henry Aaron is:
b. 660
c. 714
d. 755
e. 785

3. True or False:

The 1968 Heisman Trophy winner was none other than O.J. Simpson.

EXHIBIT 28
WIT: Fischer
DATE: 5-24-18
NOEL DEGNAN, CSR 6921

This form and test should be attached to the Initial Training Certification Form and follow the routing slip on the Certification form.

MODULE #4 HYDROGEN PLANT FEED GAS SYSTEM

1. What is the purpose of HP-2?

   a. To remove H2S from process gas streams in the various conversion units in the Complex.
   b. To produce hydrogen for use in the various hydrogen consuming units in the Complex.
   c. To create 340# steam for use in various units in the complex.
   d. To remove sulfur and nitrogen from various gas oil streams.

2. The three main Feed Gasses to HP-2 are:

   a. Sats Dry Gas from the Sats Gas plant in D/H.
   b. PG&E Natural Gas from Utilities.
   c. Refinery Fuel Gas from Utilities.
   d. DEA Acid Gas from SRF#3.
   e. Coker Dry Gas from the Flexicoker.
   f. Flexigas (FXG) from the Flexicoker.

3. The purpose of the Feed Gas Compressors J-205 and J-206 are to:

   a. circulate already reacted Process Gas back to the inlet of the Hydrotreater.
   b. control the temperature of the Feed Gasses by circulating the flow through the Kickback Loop.
   c. raise the pressure of the Feed Gas to approximately 350 psig so that the Feed Gas can enter the process.
   d. control the temperature of the F-104 outlet temperature by varying the amount of Feed Gas.

4. The purpose of Pressure Controller PC-610 is to:

   a. control the temperature of the Process Gas going to the Hydrotreater V-1103.
   b. control the Feed Gas flow to Furnace F-104 by circulating more or less flow through the Kickback Loop.
   c. control the temperature of the Feed Gas by circulating more or less flow through the Kickback Loop.
   d. control the suction pressure of Feed Gas Compressors J-205/205.

MODULE # 5 HYDROTREATER AND SULFUR REMOVAL

5. What is the purpose of the Hydrotreater V-1103?

   Circle the Two that apply.

   a. To remove water from the Feed Gas.
   b. To convert any olefins in the Feed Gas to saturated gasses (ethane, propane).
   c. To separate the Coker Dry Gas from the other HP-2 feed streams.
   d. To convert sulfur compounds in the Feed Gas, in the presence of hydrogen (H2) to hydrogen sulfide (H2S).
   e. To remove nitrogen and ammonia from the Feed Gas.

6. What is the purpose of the Hydrotreater Recycle System?

   a. To raise the pressure of the Recycle Gas to approximately 290 psig so that the Recycle Gas can enter F-104.
   b. To maintain a flow of already treated gas back to the inlet of the Hydrotreater for diluting the Feed Gas flow through the Hydrotreater.
   c. To maintain a flow a process gas to the inlet of Caustic/Water Wash Column C-225.
   d. To cool the vapors entering the Caustic/Water Wash Column C-225 to a low enough temperature for optimum H2S removal.

7. The purpose of the Recycle Compressors J-207 and J-208 is to:

   a. To raise the pressure of the Recycle Gas to approximately 300 psig so that the Recycle Gas can enter F-104.
   b. To maintain a flow of already treated gas back to the inlet of the Hydrotreater for diluting the Feed Gas flow through the Hydrotreater.
   c. To maintain a flow a process gas to the inlet of Caustic/Water Wash Column C-225.
   d. To cool the vapors entering the Caustic/Water Wash Column C-225 to a low enough temperature for optimum H2S removal.

[redacted] How is the Hydrotreater outlet temperature controlled?

   a. By TIC-172 which controls the flow of Recycle Gas that either bypasses or goes through E-1203 the Hydrotreater Recycle Cooler.
   b. By TIC-170 which controls the flow of cooling water to E-1203 the Hydrotreater Recycle Cooler.

c. By the Jacket Cooling Water system on J-207 and J-208.
d. By TIC-170 which controls the flow of treated gas, or diluent, back into the inlet of V-1103

9. The purpose of the Caustic/Water Wash Column C-225 is to:

a. convert any sulfur compounds in the Feed Gas to H2S before the gas goes to the Zinc Oxide Guard Beds.
b. remove most of the H2S from the Feed Gas before the gas goes to the Zinc Oxide Guard Beds.
c. add caustic to the Feed Gas to aid in the Steam Methane Reforming that takes place in F-104.
d. remove nitrogen and ammonia from the Feed Gas.

10. What is the purpose of the Zinc Oxide Guard Beds V-1104/V-1105?

(a.) To remove all remaining sulfur compounds and/or H2S from the Feed Gas before the gas enters Reforming Furnace F-104.
b. To convert the remaining sulfur compound in the Feed Gas to H2S before the gas enters Reforming Furnace F-104.
c. To remove entrained caustic from the Feed Gas before the gas enters Reforming Furnace F-104.
d. To convert any CO in the Feed Gas to CO2 before the gas enters Reforming Furnace F-104.

11. Why must ALL H2S be removed from the Feed Gas before it flows to F-104?

a. Because H2S is a poison to the HTS catalyst
(b.) Because H2S is harmful to the reforming catalyst in the heater tubes.
c. Because environmental regulations prohibit emitting ANY H2S from F-104's stack.
d. To allow the H_2S to be recycled back to the front end of the unit.

MODULE #6 STEAM REFORMER FURNACE F-104 PROCESS FLOWS

10. The purpose of Feed Gas Preheat Exchanger E-1206 is to:

a. preheat the 340# Process Steam before it joins the Process Gas flow upstream of F-104.
(b.) preheat the Steam/Feed Gas Mixture on the tube side by exchanging heat with hot Furnace Effluent on the shell side of the exchanger.
c. create 650# steam by exchanging heat with Boiler Feed Water on the shell side and HTS effluent on the tube side of the exchanger.

11. What is the purpose of the 300 psig nitrogen that ties into the feed gas line before entering F-104?

a. It is used during start-ups and shutdowns to maintain the back end of the plant at a high enough pressure to continue circulating MP from the Contactor to the Stripper
b. It is used to help cool the flue gas exiting the F-104 stack during normal operation.
(c.) It is used during start-ups and shutdowns to maintain the front end plant pressure and provide a flow through F-104 tubes to cool off the catalyst.
d. It is used while at low feed rate to aid in the Steam Methane Reforming.

12. The purpose of Steam Reformer F-104 is to:

a. convert the Feed Gas/Steam Mixture to mostly methane (CH4) and nitrogen (N2).
b. create 340# steam for use in various conversion units in the Complex..
c. heat the Feed Gas/Steam Mixture to a high enough temperature for the reaction in the Hydrotreater to occur.
d. convert the Feed Gas/Steam Mixture to mostly hydrogen (H2), carbon monoxide(CO) and carbon dioxide (CO2).

13. What are the four necessary components for the reforming conversion in F-104?

Circle the four that apply.

a. Feed Gas
b. Caustic
c. Source of heat
d. H2S
e. Nickel catalyst
f. 340# steam
g. Nitrogen

14. How is the 340 psig Process Steam flow controlled?

a. It is temperature controlled by TC-253, reset by F-104 outlet temperature.
b. It is ratio controlled by RC-243, reset by the Feed Gas flow.
c. It is on level control, reset by V-1106, 650# steam drum level.

MODULE #7 SHIFT CONVERSION SYSTEM

15. The purpose of the High Temperature Shift (HTS) Converter V-1108 is to:

a. convert the sulfur compounds in the Process Gas into H2S.
b. convert all off the carbon monoxide (CO) in the Process Gas into Methane and hydrogen.
c. convert approximately three quarters of the carbon monoxide (CO) in the Process Gas into carbon dioxide (CO2) and hydrogen.
d. convert any methane in the Process Gas into hydrogen.

16. True or False

The reaction in the LTS is exothermic.

MODULE #8 MP SOLUTION CONTACTOR, WATER WASH COLUMN AND METHANATOR

17. The purpose of the MP Solution Contactor is to:

a. strip CO2 from the Rich MP solution making it Lean MP solution so that it can be reused.
b. remove carbon dioxide from the Process Gas by scrubbing it with a Lean MP solution.
c. wash, or remove any MP solution entrained in the Process Gas.
d. remove H_2S from the Process Gas by scrubbing it with a Lean MP solution.

18. What is the purpose of the 300 psig nitrogen line going to the Process Gas line up-steam of Water Wash Column C-228?

a. To cool the Process Gas exiting the MP Contactor
b. To purge the Water Wash Column to the flare.
c. To remove any entrained MP in the Process Gas exiting the MP Solution Contactor.
d. To maintain pressure on the back end of the plant when HP-2 is split during a start-up or shutdown.

19. The purpose of the Water Wash Column C-228 is to:

a. remove any MP Solution entrained in the Process Gas.
b. remove carbon dioxide from the Process Gas.
c. cool the Process Gas stream before it enters the Methanator.
d. remove caustic from the Process Gas.

20. Why must all of the MP Solution be removed from the Process Gas before it enters the Methanator?

a. Because it is more economical to recover the MP Solution and recycle it to the MP Stripper to be used again.
b. Because MP solution is a Methanator Catalyst poison.
c. Because the Oxazolidone content of the MP will react with the Methanator catalyst to form Nickel Carbonyl, a toxic gas.
d. Because environmental regulations do not allow any MP solution to be in finished Hydrogen.

21. The purpose of the Methanator is to:

a. convert any entrained MP solution in the Process Gas to carbon dioxide (CO2).
b. remove any residual H2S from the Process Gas
c. convert the residual carbon monoxide (CO) and carbon dioxide (CO2) in the Process Gas to methane (CH4).
d. convert the residual methane (CH4) in the Process Gas to hydrogen (H2).

22. Why must most of the CO and CO2 in the Process Gas be converted to methane before it leaves HP-2?

a. Because CO and CO2 are poisons to the Methanator catalyst
b. Because CO and CO2 are catalyst poisons for the units that use our product hydrogen.
c. Because environmental regulations do not allow CO and CO2 to be processed in the downstream units that use our product hydrogen.
d. None of the above.

23. Where can the 200# product hydrogen from HP-2 be routed?

Check the three that apply.

a. The 200# Hydrogen Header to LOP.
b. The Flexicoker Gas Plant.
c. The atmosphere via PIC-399
d. The refinery Fuel Gas Blend Drum in Utilities.
e. The Depropanizer Column in the Dimersol.
f. The refinery Flexigas (FXG) header.

MODULE #9 FEED GAS COMPRESSORS J-205 AND J-206 AND RECYCLE COMPRESSORS J-207 AND J-208

24. What are the two different lubrication systems for Feed Gas Compressors J-205/J-206?

Circle the two that apply.

a. The Jergenson Lube Oil System.
b. The McCord Lube Oil System.
c. The D. J. Goff Lube Oil System.
d. The Crankcase or Main Lube Oil System.

25. The purpose of the Feed Gas Compressors' Jacket Cooling Water System is to:

a. cool the compressor cylinders by providing a means of removing heat caused by compression.
b. cool the Process Gas exiting the Feed Gas Compressors with cooling water.
c. cool the circulating crankcase lube oil.
d. none of the above.

26. Which of the following conditions will cause the Protective Instrument Systems ES-2 for J-205 and ES-3 for J-206 to shut down the compressors?

Circle the two that apply.

a. High compressor discharge temperature.
b. High F-104 outlet temperature.
c. High liquid level in V-1112 First Interstage KO Vessel.
d. High liquid level in V-1100 Feed Gas KO Drum.
e. Low Hydrotreater outlet temperature.
f. Bar over Jack

MODULE # 10 REFORMER HEATER F-104 FUEL GAS AND FXG FLOWS

27. The two fuels used to fire Heater F-104 are:

a. Flexigas (FXG) and Natural Gas.
b. Refinery Fuel Oil and Flexigas (FXG).
c. Refinery Fuel Gas and Flexigas (FXG).
d. Flexigas (FXG) and Hydrogen.

28. What is the purpose of the Pilots in F-104?

a. To control the pressure of the HP-2 fuel gas system.
b. To ensure that a flame source is always present in F-104.
c. To control F-104 outlet temperature.
d. None of the above.

29. What is the maximum allowable tube skin temperature in F-104?

a. 1000°F.
b. 2500°F.
c. 550°F.
d. 1750°F.

30. The following are the hazards of Flexigas (FXG):

Circle the two that apply.

a. Carbon Monoxide (CO)
b. Hydrogen Sulfide (H2S)
c. Ammonia (NH3)
d. High Pressure
e. Sulfur Dioxide (SO2)

31. The following are the precautions you must take when you go under F-104 for intrusive work:

Circle all that apply.

a. Wear a flash hood.
b. Wear a flash jacket.
c. Wear flash gloves.
d. Carry a radio tuned to A-5 – OpCen1.
e. Obtain verbal approval from the HP-2 Board Operator.

MODULE #11 BOILER FEED WATER AND STEAM SYSTEMS

32. The purpose of the Boiler Feed Water (BFW) System is to:

a. supply treated water for the Hydrotreater Recycle Cooler.
b. supply treated water for the 650 psig Steam Drum in HP-2.
c. supply treated water for the MP and water wash systems.
d. supply treated water for the Feed Gas Compressors' jacket cooling water system.

33. What is the purpose of Deaerator V-1117A?

a. Provide surge capacity for the Boiler Feed Water before it enters V-1106 650 # Steam Drum.
b. Remove carbon dioxide and oxygen from the process water using 50 psig steam as a stripping agent.
c. Cool the Boiler Feed Water before it enters V-1106 650 # Steam Drum.
d. None of the above.

34. What is the purpose of waste heat boiler E-1207?

a. Cool the Reformer (F-104) Effluent by exchanging heat with 340# Process Steam.
b. Cool the HTS Effluent by exchanging heat with Boiler Feed Water.
c. Make 650# steam by exchanging heat between Boiler Feed Water and Reformer (F-104) Effluent.
d. Preheat the Process Gas before it enters Reformer Furnace F-104.

35. The purpose of Coil #2 in the convection section of F-104 is to:

a. preheat Flexigas (FXG).
b. preheat Boiler Feed Water going to the 650 # Steam Drum..
c. exchange heat with water from the 650 # Steam Drum to generate steam.
d. superheat the 650 # steam leaving the 650 # Steam Drum.

36. The purpose of Coil #4 in the convection section of F-104 is to:

a. preheat Flexigas (FXG)
b. preheat Boiler Feed Water going to the 650# Steam Drum.
c. Exchange heat with water from the 650 # Steam Drum to generate steam.
d. Superheat the 650 # steam leaving the 650 # Steam Drum.

37. What is the purpose of 340# steam in HP-2?

a. Supply motive force to drive the Coil #3 Circulation Turbine.
b. Supply motive force to drive the MP Circulation Turbine.
c. Used as Process Steam in F-104 help the Reforming Process take place.
d. Supplies Utility Steam to the HP-2 Utility Stations.

MODULE #12 WATER WASH AND MP SYSTEM

38. What is the purpose of the Water Wash System in HP-2?

a. Provide cooling water for the Feed Gas Compressors' Jacket Cooling Water System.
b. To remove CO2 from the Process Gas before it enters the Methanator.
c. To cool the Product Hydrogen Gas downstream of the Methanator.
d. To remove any MP Solution entrained in the Process Gas downstream of the MP Solution Contactor

39. What must you do to obtain emergency Process Water if both Process Water P-5168 and P-5169 fail?

a. Forget that, just initiate ES-1 to immediately shutdown HP-2.
b. Cut feed to minimum and lower F-104 outlet temperature to 1000°F.
c. Open the block valve on the 300 psig condensate line at E-1222 outlet and block in the discharge of P-5168 and P-5169.
d. Line up the First and Second Interstage KO Drums to the Process Sewer.

40. The purpose of the MP Contactor is to:

a. Convert any Carbon Monoxide (CO) in the Process Gas to Carbon Dioxide (CO2).
b. Remove H2S from the Process Gas.
c. Remove Carbon Dioxide (CO2) from the Process Gas.
d. Convert any Carbon Dioxide in the Process Gas to Methane.

41. What is the purpose of the MP Stripper C-227?

a. To strip the CO2 from the Rich MP.
b. To strip the H2S from the Rich MP.
c. To strip the MP from the Process Gas.
d. None of the above.

42. What is the purpose of Hand Indicator Controller HIC-364 and HIC-365 located on the east side of the MP Stripper C-227?

a. To isolate the front end of the plant from the back end of the plant during start-ups and shutdowns.
b. To control the pressure of the back end of the plant when the plant is split.
c. To quickly reduce the heat input to the MP Stripper to prevent or minimize a boil-over in the Stripper.
d. To control the temperature of the Process Gas exiting the MP Stripper.

43. What are the two different heat sources to the MP Stripper Reboilers?

Circle the two that apply.

a. 650 psig steam
b. Boiler Feed Water exiting Coil #2 in the convection section of F-104.
c. Process Gas exiting the Low Temperature Shift Converter (LTS Effluent).
d. 50 psig steam.
e. Debutanizer Bottoms from the Flexicoker Gas Plant (KGP).

MODULE #13 SAMPLING AND TESTING

42. The purpose of testing the pH in C-225's Water Wash Section is to:

a. determine the amount of H2S in the Process Gas stream exiting the Hydrotreater V-1103.
b. determine if there is caustic carryover from the column's caustic section.
c. determine the amount of H2S in the Process Gas stream exiting C-225.
d. Control the acid injection rate into C-225.

43. True or False:

You must wear goggles and rubber gloves when pulling a MP or caustic sample

44. True or False:

Information on sampling procedures can be found in the FRM (Field Requirements Manual) F(F) –1.

MODULE #14 READINGS, PROCEDURES, AND THE OIL MIST LUBRICATION SYSTEM

45. The purpose of a pressure safety valve (PSV) is to:

a. control the pressure on a column or vessel.
b. protect a vessel or piece of equipment from damage due to over-pressuring by opening to relieve the excess pressure.
c. protect a vessel or piece of equipment from damage due to over-pressuring by closing the process flow to that piece of equipment.
d. Maintain a positive pressure in the flare header, thereby preventing the build-up of hydrocarbon vapor in the flare header.

46. The purpose of the Oil Mist Lubrication System is to:

a. lubricate the cylinders and packing on the Recycle and Feed Gas Compressors.
b. lubricate fan bearings throughout the unit.
c. lubricate the bearings on pumps located throughout the unit.
d. lubricate valve stems for ease of operation.

47. True or False:

a. It is important that we never steam out or use a steam lance on any piece of equipment that contains caustic because the equipment may have a pressure rating of less than 160 psig, which is the pressure of our utility steam.

MODULE #15 CWT-50, CPI, FLARES AND EMERGENCY POWER GENERATOR

47. What is the purpose of Cooling Water Tower CWT-50?

a. To cool the blowdown water before it is routed to the basins.
b. To provide cool, treated boiler feed water for use in V-1106 650 # Steam Drum.
c. To provide water to control temperatures by transferring heat from hot processes into the cooling water and then cooling the water for reuse.

48. What is the purpose of the concentrated sulfuric acid addition to the Cooling Water Tower Basin?

a. To control foaming in the Cooling Water Tower.
b. To control the temperature of the Cooling Water.
c. To prevent corrosion in exchanger tubes.
d. To control the pH of the Cooling Water and prevent scale.

49. The purpose of cooling water blowdown is to:

a. control the conductivity of the water in the correct range by removing a slipstream of cooling water containing contaminants which is replaced with fresh makeup water.
b. control the level of the cooling tower basin.
c. control foaming in the Cooling Water Tower.
d. maintain clean cooling tower screens to prevent plugging.

50. The purpose of the Corrugated Plate Interceptor (CPI) on the main Process Sewer from the OpCen units is to:

a. separate process sewer liquid from storm sewer liquid.
b. separate the solids and oil from the sewer water flow.
c. cool liquids in the process sewer before they are routed to the basins.
d. contain all the process sewer liquid from OpCen processing units until they can be removed by a vacuum truck.

51. True or False:

The purpose of the decant boxes at the CPI is to allow further residence time for the settling out of solids.

MODULE #16 HYDROGEN PLANT EMERGENCY PROCEDURES

52. What is the primary objective during any emergency?

a. To keep the unit operating.
b. To bring the unit to a safe condition as quickly as possible.
c. To evacuate the refinery.
d. To blame it on someone else.

True or False:

To evacuate personnel from your unit area during an emergency the Board Operator will

activate the Flare Area Emergency Evacuation Alarm located on the Sulfur Plant #3 Board in the Control Center.

False / Trip

53. True or False:

During an HP-2 Feed Outage, the plant must be split by opening MOV-3215 on the 60% bypass around the MP Stripper Reboilers.

54. True or False:

The pilots to F-104 will remain lit during an ES-1 outage.

55. When ES-1 is activated, the following will automatically occur:

Circle the four that apply

a. All the feed gas control valves trip closed.
b. The fuel gas and the Flexigas control valves to F-104 trip closed.
c. The Recycle Compressors J-207 and J-208 shut down.
d. The Emergency Power Generator is started.
e. TIC-166 bypasses the Hydrotreater feed around E-1208 to cool the Hydrotreater inlet as much as possible.
f. The pilots in F-104 shut off.
g. The Feed Gas Compressors J-205 and J-206 shut down.

56 The purpose of HIC-471 downstream of the Methanator KO Drum is to:

a. split the plant.
b. quickly remove heat from the MP Stripper.
c. isolate HP-2 from the 200# Hydrogen header.
d. bypass the Methanator.

END OF TEST

Shell Oil Products – US Martinez Refinery OPCEN Department	**OPERATIONS CENTRAL NORTH** **Final Written Exam** **HP-2 Process Operator**	Developed By: RA Muller Approved By: LA Roque Page 1 of 17

The following information must be completed: 15529

Check One: Initial Training (Final Exam) ✓ **or Refresher Training** _____

Name: 8 **Computer User ID:** 8 **Date:** 4-7-16

Test Administered By: Jeffrey Fischer **Score:** 100 %

Remediated Incorrect Test Questions to 100%: Yes _____ **No** N/A

Note: A score of less than 80% will require that the trainee review appropriate areas and be re-tested on all areas. A score of 80% or greater will require that the trainee be remediated on test questions answered incorrectly.

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1. The 1973 National League Cy Young Award winner was:
___a. Tom Seaver
___b. Juan Marichal
___c. Bob Gibson
___d. Nolan Ryan

2. The number of lifetime home runs by Henry Aaron is:
b. 660
c. 714
d. 755
e. 785

3. True or False:

The 1968 Heisman Trophy winner was none other than O.J. Simpson.

EXHIBIT 29
WIT: Fischer
DATE: 5-24-18
NOEL DEGNAN, CSR 6921

This form and test should be attached to the Initial Training Certification Form and follow the routing slip on the Certification form.

MODULE #4 HYDROGEN PLANT FEED GAS SYSTEM

1. What is the purpose of HP-2?

   a. To remove H2S from process gas streams in the various conversion units in the Complex.
   (b) To produce hydrogen for use in the various hydrogen consuming units in the Complex.
   c. To create 340# steam for use in various units in the complex.
   d. To remove sulfur and nitrogen from various gas oil streams.

2. The three main Feed Gasses to HP-2 are:

   (a) Sats Dry Gas from the Sats Gas plant in D/H.
   (b) PG&E Natural Gas from Utilities.
   c. Refinery Fuel Gas from Utilities.
   d. DEA Acid Gas from SRF#3.
   (e) Coker Dry Gas from the Flexicoker.
   f. Flexigas (FXG) from the Flexicoker.

3. The purpose of the Feed Gas Compressors J-205 and J-206 are to:

   a. circulate already reacted Process Gas back to the inlet of the Hydrotreater.
   b. control the temperature of the Feed Gasses by circulating the flow through the Kickback Loop.
   (c) raise the pressure of the Feed Gas to approximately 350 psig so that the Feed Gas can enter the process.
   d. control the temperature of the F-104 outlet temperature by varying the amount of Feed Gas.

4. The purpose of Pressure Controller PC-610 is to:

   a. control the temperature of the Process Gas going to the Hydrotreater V-1103.
   (b) control the Feed Gas flow to Furnace F-104 by circulating more or less flow through the Kickback Loop.
   c. control the temperature of the Feed Gas by circulating more or less flow through the Kickback Loop.
   d. control the suction pressure of Feed Gas Compressors J-205/205.

MODULE # 5 HYDROTREATER AND SULFUR REMOVAL

5. What is the purpose of the Hydrotreater V-1103?

   Circle the Two that apply.

   a. To remove water from the Feed Gas.
   (b.) To convert any olefins in the Feed Gas to saturated gasses (ethane, propane).
   c. To separate the Coker Dry Gas from the other HP-2 feed streams.
   (d.) To convert sulfur compounds in the Feed Gas, in the presence of hydrogen (H2) to hydrogen sulfide (H2S).
   e. To remove nitrogen and ammonia from the Feed Gas.

6. What is the purpose of the Hydrotreater Recycle System?

   a. To raise the pressure of the Recycle Gas to approximately 290 psig so that the Recycle Gas can enter F-104.
   (b) To maintain a flow of already treated gas back to the inlet of the Hydrotreater for diluting the Feed Gas flow through the Hydrotreater.
   c. To maintain a flow a process gas to the inlet of Caustic/Water Wash Column C-225.
   d. To cool the vapors entering the Caustic/Water Wash Column C-225 to a low enough temperature for optimum H2S removal.

7. The purpose of the Recycle Compressors J-207 and J-208 is to:

   a. To raise the pressure of the Recycle Gas to approximately 300 psig so that the Recycle Gas can enter F-104.
   (b) To maintain a flow of already treated gas back to the inlet of the Hydrotreater for diluting the Feed Gas flow through the Hydrotreater.
   c. To maintain a flow a process gas to the inlet of Caustic/Water Wash Column C-225.
   d. To cool the vapors entering the Caustic/Water Wash Column C-225 to a low enough temperature for optimum H2S removal.

[redacted] How is the Hydrotreater outlet temperature controlled?

   a. By TIC-172 which controls the flow of Recycle Gas that either bypasses or goes through E-1203 the Hydrotreater Recycle Cooler.
   b. By TIC-170 which controls the flow of cooling water to E-1203 the Hydrotreater Recycle Cooler.

c. By the Jacket Cooling Water system on J-207 and J-208.
(d) By TIC-170 which controls the flow of treated gas, or diluent, back into the inlet of V-1103

9. The purpose of the Caustic/Water Wash Column C-225 is to:

a. convert any sulfur compounds in the Feed Gas to H2S before the gas goes to the Zinc Oxide Guard Beds.
(b) remove most of the H2S from the Feed Gas before the gas goes to the Zinc Oxide Guard Beds.
c. add caustic to the Feed Gas to aid in the Steam Methane Reforming that takes place in F-104.
d. remove nitrogen and ammonia from the Feed Gas.

10. What is the purpose of the Zinc Oxide Guard Beds V-1104/V-1105?

(a.) To remove all remaining sulfur compounds and/or H2S from the Feed Gas before the gas enters Reforming Furnace F-104.
b. To convert the remaining sulfur compound in the Feed Gas to H2S before the gas enters Reforming Furnace F-104.
c. To remove entrained caustic from the Feed Gas before the gas enters Reforming Furnace F-104.
d. To convert any CO in the Feed Gas to CO2 before the gas enters Reforming Furnace F-104.

11. Why must ALL H2S be removed from the Feed Gas before it flows to F-104?

a. Because H2S is a poison to the HTS catalyst
(b) Because H2S is harmful to the reforming catalyst in the heater tubes.
c. Because environmental regulations prohibit emitting ANY H2S from F-104's stack.
d. To allow the H_2S to be recycled back to the front end of the unit.

MODULE #6 STEAM REFORMER FURNACE F-104 PROCESS FLOWS

10. The purpose of Feed Gas Preheat Exchanger E-1206 is to:

a. preheat the 340# Process Steam before it joins the Process Gas flow upstream of F-104.
(b.) preheat the Steam/Feed Gas Mixture on the tube side by exchanging heat with hot Furnace Effluent on the shell side of the exchanger.
c. create 650# steam by exchanging heat with Boiler Feed Water on the shell side and HTS effluent on the tube side of the exchanger.

11. What is the purpose of the 300 psig nitrogen that ties into the feed gas line before entering F-104?

a. It is used during start-ups and shutdowns to maintain the back end of the plant at a high enough pressure to continue circulating MP from the Contactor to the Stripper
b. It is used to help cool the flue gas exiting the F-104 stack during normal operation.
(c) It is used during start-ups and shutdowns to maintain the front end plant pressure and provide a flow through F-104 tubes to cool off the catalyst.
d. It is used while at low feed rate to aid in the Steam Methane Reforming.

12. The purpose of Steam Reformer F-104 is to:

a. convert the Feed Gas/Steam Mixture to mostly methane (CH4) and nitrogen (N2).
b. create 340# steam for use in various conversion units in the Complex..
c. heat the Feed Gas/Steam Mixture to a high enough temperature for the reaction in the Hydrotreater to occur.
(d) convert the Feed Gas/Steam Mixture to mostly hydrogen (H2), carbon monoxide(CO) and carbon dioxide (CO2).

13. What are the four necessary components for the reforming conversion in F-104?

Circle the four that apply.

(a) Feed Gas
b. Caustic
(c) Source of heat
d. H2S
(e) Nickel catalyst
(f) 340# steam
g. Nitrogen

14. How is the 340 psig Process Steam flow controlled?

a. It is temperature controlled by TC-253, reset by F-104 outlet temperature.
(b) It is ratio controlled by RC-243, reset by the Feed Gas flow.
c. It is on level control, reset by V-1106, 650# steam drum level.

MODULE #7 SHIFT CONVERSION SYSTEM

15. The purpose of the High Temperature Shift (HTS) Converter V-1108 is to:

a. convert the sulfur compounds in the Process Gas into H2S.
b. convert all off the carbon monoxide (CO) in the Process Gas into Methane and hydrogen.
(c) convert approximately three quarters of the carbon monoxide (CO) in the Process Gas into carbon dioxide (CO2) and hydrogen.
d. convert any methane in the Process Gas into hydrogen.

16. (True) or False

The reaction in the LTS is exothermic.

MODULE #8 MP SOLUTION CONTACTOR, WATER WASH COLUMN AND METHANATOR

17. The purpose of the MP Solution Contactor is to:

a. strip CO2 from the Rich MP solution making it Lean MP solution so that it can be reused.
(b) remove carbon dioxide from the Process Gas by scrubbing it with a Lean MP solution.
c. wash, or remove any MP solution entrained in the Process Gas.
d. remove H_2S from the Process Gas by scrubbing it with a Lean MP solution.

18. What is the purpose of the 300 psig nitrogen line going to the Process Gas line up-steam of Water Wash Column C-228?

a. To cool the Process Gas exiting the MP Contactor
b. To purge the Water Wash Column to the flare.
c. To remove any entrained MP in the Process Gas exiting the MP Solution Contactor.
(d.) To maintain pressure on the back end of the plant when HP-2 is split during a start-up or shutdown.

19. The purpose of the Water Wash Column C-228 is to:

(a) remove any MP Solution entrained in the Process Gas.
b. remove carbon dioxide from the Process Gas.
c. cool the Process Gas stream before it enters the Methanator.
d. remove caustic from the Process Gas.

20. Why must all of the MP Solution be removed from the Process Gas before it enters the Methanator?

a. Because it is more economical to recover the MP Solution and recycle it to the MP Stripper to be used again.
(b.) Because MP solution is a Methanator Catalyst poison.
c. Because the Oxazolidone content of the MP will react with the Methanator catalyst to form Nickel Carbonyl, a toxic gas.
d. Because environmental regulations do not allow any MP solution to be in finished Hydrogen.

21. The purpose of the Methanator is to:

a. convert any entrained MP solution in the Process Gas to carbon dioxide (CO2).
b. remove any residual H2S from the Process Gas
(c) convert the residual carbon monoxide (CO) and carbon dioxide (CO2) in the Process Gas to methane (CH4).
d. convert the residual methane (CH4) in the Process Gas to hydrogen (H2).

22. Why must most of the CO and CO2 in the Process Gas be converted to methane before it leaves HP-2?

a. Because CO and CO2 are poisons to the Methanator catalyst
(b) Because CO and CO2 are catalyst poisons for the units that use our product hydrogen.
c. Because environmental regulations do not allow CO and CO2 to be processed in the downstream units that use our product hydrogen.
d. None of the above.

23. Where can the 200# product hydrogen from HP-2 be routed?

Check the three that apply.

(a) The 200# Hydrogen Header to LOP.
b. The Flexicoker Gas Plant.
(c) The atmosphere via PIC-399
(d) The refinery Fuel Gas Blend Drum in Utilities.
e. The Depropanizer Column in the Dimersol.
f. The refinery Flexigas (FXG) header.

MODULE #9 FEED GAS COMPRESSORS J-205 AND J-206 AND RECYCLE COMPRESSORS J-207 AND J-208

24. What are the two different lubrication systems for Feed Gas Compressors J-205/J-206?

Circle the two that apply.

a. The Jergenson Lube Oil System.
(b) The McCord Lube Oil System.
c. The D. J. Goff Lube Oil System.
(d) The Crankcase or Main Lube Oil System.

25. The purpose of the Feed Gas Compressors' Jacket Cooling Water System is to:

(a) cool the compressor cylinders by providing a means of removing heat caused by compression.
b. cool the Process Gas exiting the Feed Gas Compressors with cooling water.
c. cool the circulating crankcase lube oil.
d. none of the above.

26. Which of the following conditions will cause the Protective Instrument Systems ES-2 for J-205 and ES-3 for J-206 to shut down the compressors?

Circle the two that apply.

a. High compressor discharge temperature.
b. High F-104 outlet temperature.
c. High liquid level in V-1112 First Interstage KO Vessel.
(d) High liquid level in V-1100 Feed Gas KO Drum.
e. Low Hydrotreater outlet temperature.
(f) Bar over Jack

MODULE # 10 REFORMER HEATER F-104 FUEL GAS AND FXG FLOWS

27. The two fuels used to fire Heater F-104 are:

a. Flexigas (FXG) and Natural Gas.
b. Refinery Fuel Oil and Flexigas (FXG).
(c) Refinery Fuel Gas and Flexigas (FXG).
d. Flexigas (FXG) and Hydrogen.

28. What is the purpose of the Pilots in F-104?

a. To control the pressure of the HP-2 fuel gas system.
(b) To ensure that a flame source is always present in F-104.
c. To control F-104 outlet temperature.
d. None of the above.

29. What is the maximum allowable tube skin temperature in F-104?

a. 1000°F.
b. 2500°F.
c. 550°F.
(d) 1750°F.

30. The following are the hazards of Flexigas (FXG):

Circle the two that apply.

(a) Carbon Monoxide (CO)
(b) Hydrogen Sulfide (H2S)
c. Ammonia (NH3)
d. High Pressure
e. Sulfur Dioxide (SO2)

31. The following are the precautions you must take when you go under F-104 for intrusive work:

Circle all that apply.

(a) Wear a flash hood.
(b) Wear a flash jacket.
(c) Wear flash gloves.
(d) Carry a radio tuned to A-5 – OpCen1.
(e) Obtain verbal approval from the HP-2 Board Operator.

MODULE #11 BOILER FEED WATER AND STEAM SYSTEMS

32. The purpose of the Boiler Feed Water (BFW) System is to:

a. supply treated water for the Hydrotreater Recycle Cooler.
(b) supply treated water for the 650 psig Steam Drum in HP-2.
c. supply treated water for the MP and water wash systems.
d. supply treated water for the Feed Gas Compressors' jacket cooling water system.

33. What is the purpose of Deaerator V-1117A?

a. Provide surge capacity for the Boiler Feed Water before it enters V-1106 650 # Steam Drum.
(b) Remove carbon dioxide and oxygen from the process water using 50 psig steam as a stripping agent.
c. Cool the Boiler Feed Water before it enters V-1106 650 # Steam Drum.
d. None of the above.

34. What is the purpose of waste heat boiler E-1207?

a. Cool the Reformer (F-104) Effluent by exchanging heat with 340# Process Steam.
b. Cool the HTS Effluent by exchanging heat with Boiler Feed Water.
(c) Make 650# steam by exchanging heat between Boiler Feed Water and Reformer (F-104) Effluent.
d. Preheat the Process Gas before it enters Reformer Furnace F-104.

35. The purpose of Coil #2 in the convection section of F-104 is to:

a. preheat Flexigas (FXG).
(b) preheat Boiler Feed Water going to the 650 # Steam Drum..
c. exchange heat with water from the 650 # Steam Drum to generate steam.
d. superheat the 650 # steam leaving the 650 # Steam Drum.

36. The purpose of Coil #4 in the convection section of F-104 is to:

a. preheat Flexigas (FXG)
b. preheat Boiler Feed Water going to the 650# Steam Drum.
c. Exchange heat with water from the 650 # Steam Drum to generate steam.
(d) Superheat the 650 # steam leaving the 650 # Steam Drum.

37. What is the purpose of 340# steam in HP-2?

a. Supply motive force to drive the Coil #3 Circulation Turbine.
b. Supply motive force to drive the MP Circulation Turbine.
(c) Used as Process Steam in F-104 help the Reforming Process take place.
d. Supplies Utility Steam to the HP-2 Utility Stations.

MODULE #12 WATER WASH AND MP SYSTEM

38. What is the purpose of the Water Wash System in HP-2?

a. Provide cooling water for the Feed Gas Compressors' Jacket Cooling Water System.
b. To remove CO2 from the Process Gas before it enters the Methanator.
c. To cool the Product Hydrogen Gas downstream of the Methanator.
(d) To remove any MP Solution entrained in the Process Gas downstream of the MP Solution Contactor

39. What must you do to obtain emergency Process Water if both Process Water P-5168 and P-5169 fail?

a. Forget that, just initiate ES-1 to immediately shutdown HP-2.
b. Cut feed to minimum and lower F-104 outlet temperature to 1000°F.
© Open the block valve on the 300 psig condensate line at E-1222 outlet and block in the discharge of P-5168 and P-5169.
d. Line up the First and Second Interstage KO Drums to the Process Sewer.

40. The purpose of the MP Contactor is to:

a. Convert any Carbon Monoxide (CO) in the Process Gas to Carbon Dioxide (CO2).
b. Remove H2S from the Process Gas.
© Remove Carbon Dioxide (CO2) from the Process Gas.
d. Convert any Carbon Dioxide in the Process Gas to Methane.

41. What is the purpose of the MP Stripper C-227?

(a) To strip the CO2 from the Rich MP.
b. To strip the H2S from the Rich MP.
c. To strip the MP from the Process Gas.
d. None of the above.

42. What is the purpose of Hand Indicator Controller HIC-364 and HIC-365 located on the east side of the MP Stripper C-227?

a. To isolate the front end of the plant from the back end of the plant during start-ups and shutdowns.
b. To control the pressure of the back end of the plant when the plant is split.
(c) To quickly reduce the heat input to the MP Stripper to prevent or minimize a boil-over in the Stripper.
d. To control the temperature of the Process Gas exiting the MP Stripper.

43. What are the two different heat sources to the MP Stripper Reboilers?

Circle the two that apply.

a. 650 psig steam
b. Boiler Feed Water exiting Coil #2 in the convection section of F-104.
(c) Process Gas exiting the Low Temperature Shift Converter (LTS Effluent).
(d) 50 psig steam.
e. Debutanizer Bottoms from the Flexicoker Gas Plant (KGP).

MODULE #13 SAMPLING AND TESTING

42. The purpose of testing the pH in C-225's Water Wash Section is to:

a. determine the amount of H2S in the Process Gas stream exiting the Hydrotreater V-1103.
(b) determine if there is caustic carryover from the column's caustic section.
c. determine the amount of H2S in the Process Gas stream exiting C-225.
d. Control the acid injection rate into C-225.

43. (True) or False:

You must wear goggles and rubber gloves when pulling a MP or caustic sample

44. (True) or False:

Information on sampling procedures can be found in the FRM (Field Requirements Manual) F(F) –1.

MODULE #14 READINGS, PROCEDURES, AND THE OIL MIST LUBRICATION SYSTEM

45. The purpose of a pressure safety valve (PSV) is to:

a. control the pressure on a column or vessel.
(b) protect a vessel or piece of equipment from damage due to over-pressuring by opening to relieve the excess pressure.
c. protect a vessel or piece of equipment from damage due to over-pressuring by closing the process flow to that piece of equipment.
d. Maintain a positive pressure in the flare header, thereby preventing the build-up of hydrocarbon vapor in the flare header.

46. The purpose of the Oil Mist Lubrication System is to:

a. lubricate the cylinders and packing on the Recycle and Feed Gas Compressors.
b. lubricate fan bearings throughout the unit.
(c) lubricate the bearings on pumps located throughout the unit.
d. lubricate valve stems for ease of operation.

47. True or (False)

a. It is important that we never steam out or use a steam lance on any piece of equipment that contains caustic because the equipment may have a pressure rating of less than 160 psig, which is the pressure of our utility steam.

MODULE #15 CWT-50, CPI, FLARES AND EMERGENCY POWER GENERATOR

47. What is the purpose of Cooling Water Tower CWT-50?

a. To cool the blowdown water before it is routed to the basins.
b. To provide cool, treated boiler feed water for use in V-1106 650 # Steam Drum.
(c) To provide water to control temperatures by transferring heat from hot processes into the cooling water and then cooling the water for reuse.

48. What is the purpose of the concentrated sulfuric acid addition to the Cooling Water Tower Basin?

a. To control foaming in the Cooling Water Tower.
b. To control the temperature of the Cooling Water.
c. To prevent corrosion in exchanger tubes.
(d) To control the pH of the Cooling Water and prevent scale.

49. The purpose of cooling water blowdown is to:

(a) control the conductivity of the water in the correct range by removing a slipstream of cooling water containing contaminants which is replaced with fresh makeup water.
b. control the level of the cooling tower basin.
c. control foaming in the Cooling Water Tower.
d. maintain clean cooling tower screens to prevent plugging.

50. The purpose of the Corrugated Plate Interceptor (CPI) on the main Process Sewer from the OpCen units is to:

a. separate process sewer liquid from storm sewer liquid.
(b) separate the solids and oil from the sewer water flow.
c. cool liquids in the process sewer before they are routed to the basins.
d. contain all the process sewer liquid from OpCen processing units until they can be removed by a vacuum truck.

51. (True) or False:

The purpose of the decant boxes at the CPI is to allow further residence time for the settling out of solids.

MODULE #16: HYDROGEN PLANT EMERGENCY PROCEDURES

52. What is the primary objective during any emergency?

a. To keep the unit operating.
(b) To bring the unit to a safe condition as quickly as possible.
c. To evacuate the refinery.
d. To blame it on someone else.

True or (False)

To evacuate personnel from your unit area during an emergency the Board Operator will

activate the Flare Area Emergency Evacuation Alarm located on the Sulfur Plant #3 Board in the Control Center.

53. True or (False)

During an HP-2 Feed Outage, the plant must be split by opening MOV-3215 on the 60% bypass around the MP Stripper Reboilers.

54. (True) or False:

The pilots to F-104 will remain lit during an ES-1 outage.

55. When ES-1 is activated, the following will automatically occur:

Circle the four that apply

(a) All the feed gas control valves trip closed.
(b) The fuel gas and the Flexigas control valves to F-104 trip closed.
c. The Recycle Compressors J-207 and J-208 shut down.
d. The Emergency Power Generator is started.
(e) TIC-166 bypasses the Hydrotreater feed around E-1208 to cool the Hydrotreater inlet as much as possible.
f. The pilots in F-104 shut off.
(g) The Feed Gas Compressors J-205 and J-206 shut down.

56 The purpose of HIC-471 downstream of the Methanator KO Drum is to:

a. split the plant.
b. quickly remove heat from the MP Stripper.
(c) isolate HP-2 from the 200# Hydrogen header.
d. bypass the Methanator.

END OF TEST